Vanderbilt Law Review

Volume 33
Issue 6 *Issue 6 - November 1980*

Article 1

11-1980

Encouraging Safety: The Limits of Tort Law and Government Regulation

Richard J. Pierce, Jr.

VANDERBILT LAW REVIEW

VOLUME 33 NOVEMBER 1980 NUMBER 6

Encouraging Safety: The Limits of Tort Law and Government Regulation

*Richard J. Pierce, Jr.**

I. INTRODUCTION

Society wants more expenditures to reduce the risks of injury, illness, and premature death associated with many activities, but simultaneously it wants the fruits of those activities to continue to be available at a low cost. To some extent, these goals are inherently in conflict. On occasion society may give vitality to the slogan that human life has an infinite value,[1] but it can do so only in narrow contexts and for brief periods. More often, artful self-deception is practiced to create the appearance of adhering to an impossible, but widely held, ideal, while in actuality lives are balanced against dollars.[2] Every societal decision requires at least an implicit valuation of human life.[3]

While it may be impossible, at a tolerable cost, to eliminate accidents completely, society can reduce substantially the aggregate costs of accidents without necessarily increasing total spending on accident cost avoidance. An examination of three character-

* Professor of Law, University of Kansas; Visiting Professor of Law, University of Virginia. B.S., Lehigh University, 1965; J.D., University of Virginia, 1972. This investigation was supported by University of Kansas General Research Allocation No. XO-0038. The author wishes to acknowledge the substantial assistance of M. Burns, T. McGarity, G. Calabresi, and M. Shapo, who reviewed and criticized earlier drafts of this Article. The author is grateful particularly to P. Lowry, who originally suggested the need for an investigation of this topic.

1. G. CALABRESI & P. BOBBITT, TRAGIC CHOICES 187-89 (1978).
2. *Id.* at 136-39.
3. *See* Green, *Cost-Risk-Benefit Assessment and the Law: Introduction and Perspective*, 45 GEO. WASH. L. REV. 901 (1977).

istics of the existing cost-containment methodology demonstrates how safety can be increased without an increase in safety-related spending. First, society spends more on safety in some areas than others relative to the potential for reduction of accident costs in each area. For example, if some of the money now spent on airline safety were shifted to school bus safety, more lives would be saved without increasing total safety spending. Second, a large percentage of the money now spent to reduce accident costs is misdirected and ineffective. The method chosen to control accident costs often increases the cost of engaging in various activities without a commensurate decrease in accident costs. Third, the present methods of encouraging safety have such high administrative costs that only a modest fraction of what society spends in an effort to obtain safety actually contributes to achieving that end. If these process-related inefficiencies in society's mechanisms for encouraging safety can be reduced, it is possible to come closer to the seemingly self-contradictory goal of increasing safety while keeping the costs of goods and services in check.

Society uses the legal system as its primary means of influencing the level of spending on accident cost avoidance. Through tort law and safety regulation, the legal system places implicit values on human life in varying contexts and translates those values into either commands or inducements to reduce accident costs. As the related problems of excessive accidents and high inflation have been traced consistently to perceived flaws in the rules of tort law and safety regulation, both legislatures and courts have focused considerable attention on the operation and faults of these two behavior guidance mechanisms. Most analyses of the problem, however, begin with an implicit acceptance of the preexisting legal structure and suggest modest tinkering with the rules applicable in a specific area to respond to particnlarly egregious problems—for example, the rules for recovery of damages for medical malpractice as they relate to rapidly increasing medical costs. The result has been a hodgepodge of ad hoc suggestions for incremental changes in tort law or safety regulation as applied to particular activities. The changes suggested are often inconsistent conceptually and functionally, and most are too limited in scope to offer any real promise for improving the allocation of safety-related resources. Few studies attempt to analyze the functional utility of the basic legal doctrines used in tort law and safety regulation. Since the problems are global and are deeply embedded in the basic rules of the present legal system, the narrow scope of most studies limits

their value as a basis for constructive change.

Professor Calabresi's work is a notable exception to the generally limited utility of most modern studies of legal mechanisms for encouraging safety.[4] In this Article, I attempt to build upon Professor Calabresi's basic analytical framework.[5] Identifying the flaws in present systems of encouraging safety and demonstrating, through the use of empirical evidence, the extreme distortions created by those flaws, I propose an entirely new approach to the goal of reducing accident costs through the legal system.

II. The Market as a Means of Inducing Spending on Safety

No one seriously suggests that the market alone is effective in all circumstances to induce adequate spending on health and safety. Every society has found it necessary to supplement contract law with tort law and direct safety regulation. It is essential, however, to analyze briefly the way in which the market treats safety in order to understand the limits of contract law that necessitate supplementary reliance upon tort law and regulation.

A. Advantages of the Market

In theory, contract law alone should produce the optimal level of spending on accident cost avoidance. Each individual can express a preference for safety by bargaining away something else of value in return for a particular level of safety.[6] The great virtue of the market as a means of allocating resources for safety is its ability to accommodate a wide range of individual preferences and tastes.[7] Each individual can choose, for instance, whether to save money by travelling by motorcycle or to purchase greater safety by using a four-wheeled, metal-encased mode of transport. Since values are highly individualized, the choice of purchasing more or less safety is to a significant extent linked to the individual freedom so highly regarded by American society. In theory, the market, through the legal system's commitment to enforce voluntary bilateral agreements, can reflect any individual's preference for a high

4. *See, e.g.*, G. Calabresi, The Costs of Accidents (1970); G. Calabresi & P. Bobbitt, *supra* note 1.

5. I am greatly indebted to Professor Calabresi for providing the excellent analytic framework which I attempt to adopt and apply in this Article. I must, however, assume full responsibility for any distortion or misapplication of Professor Calabresi's analysis in this Article.

6. Coase, *The Problem of Social Cost*, 3 J. L. & Econ. 1 (1960).

7. G. Calabresi, *supra* note 4, at 69.

degree of safety while simultaneously permitting other individuals to trade safety for convenience, speed, or whatever else the individual values more than an increment of safety. Significant practical constraints, however, limit the market's ability to perform this function.

B. *Limits of the Market*

Four major factors impair the ability of the market to channel safety spending into patterns deemed optimal by all: externalities; transaction costs; limited cognitive ability of participants; and the relationship of market choices to preexisting patterns of wealth distribution.[8] Each factor alone might be manageable; but together they prevent the market for safety from performing satisfactorily in many circumstances.

The externalities problem arises from the fact that many transactions between two individuals have effects upon third parties whose interests are not represented in bilateral contracts. Thus, for example, when a farmer purchases a pesticide from a manufacturer, the interests of both the farmer and the manufacturer presumably are furthered by the transaction; this arrangement, however, may not at all reflect the interests of the farmer's neighbors. Those neighbors may include beekeepers and pregnant women whose interests are in direct conflict with those of the farmer and the pesticide manufacturer.

It is theoretically possible to eliminate all externalities associated with an activity or transaction solely through contract law.[9] All parties affected by the transaction could enter into negotiations, yielding a voluntary multilateral agreement that would further the interests of all. Unfortunately, this theoretically perfect method of resolving the externalities problem is rendered unavailable in many circumstances by the second problem—transaction costs.[10]

---

8. To this list, Professor Calabresi adds unemployment effects, monopoly power, and "second best" problems. G. CALABRESI, *supra* note 4, at 78-94. I see no need to treat these factors independently. Unemployment effects, to the extent they are not reflected in private costs, are included in the general category of externalities. Monopoly and second best problems are sufficiently troublesome for reasons apart from their effect on the market for safety that they have been analyzed in detail elsewhere. *See, e.g.*, Pierce, *Natural Gas Rate Design: A Neglected Issue*, 31 VAND. L. REV. 1089 (1978).

9. Coase, *supra* note 6.

10. Solving the externalities problem through multilateral negotiations also requires a mechanism for accommodating the problem of the holdout. Compulsory arbitration may eliminate this constraint, but only with some compromise of the conditions required for

It is far too expensive to attempt to identify all of the individuals potentially affected by a transaction and to permit each to participate in the negotiations concerning the transaction. Consider, for example, the number of individuals with varied interests potentially affected by a farmer's decision to apply a pesticide that remains chemically active in a variety of organisms for years and that can be transported by air, water, or ingestion through chains of organisms. Because of the innumerable ways that countless individuals might somehow be affected by such a transient substance, it is virtually impossible, at an acceptable cost, to take account of everyone's interest.

The third factor is the limited cognitive ability of participants in the bargaining process. Even assuming that all nontrivial individual interests in a transaction are represented in negotiations, the resulting contract can be assumed to further the interests of everyone concerned only if the parties are aware of all the implications of the transaction. This is rarely the case, and often an individual's lack of knowledge can have a profound distorting effect on the resulting contract. Continuing with the pesticide example, consider the effect on the transaction and the assumption that it will further the interests of all parties if the pregnant neighbor of the farmer is not aware of either the teratogenic effects of the pesticide or its transportability through air. These inadequacies can be remedied, of course, by improving the state of knowledge of each participant. Here again, however, enormous costs are required to disseminate information about even the most important factual implications of some transactions only to those individuals with nontrivial interests. These costs often render efforts at individual education prohibitively expensive.[11]

Participants' cognitive limits undermine bargaining effectiveness in yet another way. Cognition implies not only knowledge of relevant facts but the ability to form rational judgments based upon those facts. Thus, the assumption that bargaining between the farmer and his pregnant neighbor will yield a voluntary transaction that will further the interests of both requires not only that the pregnant neighbor be aware of the teratogenic risk associated with the pesticide but also that the neighbor be able to act ration-

---

Pareto optimality.

11. One of the significant transaction costs associated with the education of participants in bargaining often is the need for public disclosure of trade secrets. *See* McGarity & Shapiro, *The Trade Secret Status of Health and Safety Testing Information: Reforming Agency Disclosure Policies*, 93 HARV. L. REV. 837 (1980).

ally on the basis of this knowledge. Psychological studies uniformly demonstrate that individuals have a limited ability to make rational decisions concerning health and safety risks even when they have full knowledge of the nature of those risks.[12] Characteristics of risks independent of their magnitude and nature can cause an individual to react very differently to objectively comparable risks. For example, the way in which a risk is communicated influences how people react to it.[13] Thus, even though driving without seatbelts is much riskier than swimming in salt water, most people currently do not perceive and act upon the relative risks in a rational manner. If the box office smash of the 1970s had been called *Belts* instead of *Jaws* most people would perceive a very different relationship between these two risks. To a large extent, then, society shapes each individual's subjective perception of risks to create an objectively irrational pattern of responses. This leads to a degree of circularity in the assumption that the market will induce spending on safety at a level optimal to each individual.[14] The market can accommodate a wide variety of tastes for risk and large shifts in such tastes over time, but it does not function well when tastes for risk violate the fundamental principle of transitivity.

The final flaw in the market is the fact that the outcome of any market-based transaction depends heavily on the preexisting distribution of wealth. This problem is present in all markets, but when life itself is the commodity being exchanged, all societies have rejected pure reliance on the market as a means of allocating resources. Society will not allow a wealthy individual to "purchase" the life of a poor individual even if both are "voluntary" participants in the transaction.

---

12. Slovic, *Judgment, Choice and Societal Risk Taking*, in JUDGMENT AND DECISION IN PUBLIC POLICY FORMATION 99-102 (K. Hammond ed. 1978); G. CALABRESI & P. BOBBITT, *supra* note 1, at 116-17.

13. Slovic, *supra* note 12, at 100-01.

14. Changing legal rules to avoid problems created by the cognitive limits of individuals may be characterized accurately as paternalism. For those who find paternalistic criticisms and justifications for change unpalatable, I have two responses. First, factors independent of paternalism are sufficient to demonstrate the ineffectiveness of the market for safety and to justify changes in the legal framework within which that market functions. Second, socialization of safety risks through insurance and social welfare programs has become so widespread in the United States that paternalism may have to be considered a legitimate justification for changing legal mechanisms. For instance, people who foolishly refuse to wear helmets when they ride motorcycles not only endanger themselves but also cause large increases in the cost of motorcycle insurance and life insurance and an increase in the amount of general revenue allocated to various social welfare programs.

C. *Future Effectiveness of the Market*

Several factors suggest that in the years to come the market will become increasingly unacceptable as a means of allocating safety resources. With respect to the critical externalities problem, two phenomena are now evident. Activities that create externalities are becoming more prevalent, and societal awareness of the externalities associated with traditional activities is increasing.[15] Many forces have converged to make the health and safety of each individual member of society much more dependent upon the actions of third parties with whom no bargaining relationship exists. Moreover, heretofore unknown external relationships are becoming apparent—for example, a tall smokestack on a midwestern manufacturing plant affects the health of East Coast residents through the phenomenon of acid rain.

Increased externalities inevitably mean increases in the transaction costs that would have to be incurred to permit the market to accommodate each nontrivial interest affected by the transaction. Thus, the cost of identifying affected individuals grows and with it, in geometric proportion to the number of individual participants, the cost of the actual bargaining process itself.

As contractual relationships grow increasingly complex, the market will become increasingly ineffective as a mechanism for internalizing costs. The cognitive abilities of the bargaining parties are simply too limited. For a market in safety to function effectively in modern society each individual worker and consumer would have to master statistics, dose-response relationships, and the etiology of a variety of diseases and learn to use that information rationally. Given the general inability of individuals to distinguish relatively simple safety risks rationally, it is totally unrealistic to assume a rational response pattern to the diverse, complex activity/risk relationships that will confront each individual in the future. Indeed, increased irrationality in individual confrontations with risk can be expected as the complexity and diversity of risk relationships increases.

There is yet another reason why the market is likely to be less acceptable as a means of allocating safety in the future. It is possible that what has been perceived as an acceptable level and distribution of safety attributable to market forces actually results from other forces whose power is now waning. Historically, many deci-

15. *See* Rowe, *Governmental Regulation of Societal Risks*, 45 GEO. WASH. L. REV. 944, 945 (1977).

sions on health and safety were influenced as much by personal moral, ethical, and religious values as by economic self-interest. With the replacement over the last few decades of the small firm employing local labor and serving a local market by the large firm with multiple plants and regional or national markets, the influence of personal values in decisions concerning safety has declined.[16] The modern professional manager makes decisions in an institutional context that encourage depersonalization and economic rationality. Thus, ironically, externalization of the health and safety costs of decisions is much more likely to produce an allocation of safety resources that is irrational from a societal perspective today than it was in the society of thirty or forty years ago when factors other than cost influenced private decisionmakers.

It might be argued that sensitivity to the public relations implications of private health and safety decisions mitigates the impact of cost factors. Public relations considerations, however, are likely to exacerbate the tendency toward irrational spending patterns. The professional manager is likely to overspend on safety issues that are highly visible and underspend on those that are not likely to receive prominent attention from the media. Perhaps, for some highly visible risks, the expense assumed because of public relations factors may counteract both the decreased proportion of accident costs that are internalized to the firm and the decreased importance of moral and religious values; it would require a great leap of faith, however, to assume that any sort of rough balance of these factors will evolve for most health and safety decisions. Thus, it is fair to infer that there is a large and growing range of activities in which the market alone cannot be relied upon to produce adequate spending to reduce health and safety risks.

III. Tort Law as an Aid to the Market

Tort law attempts to serve three societal goals. It reduces individual hardship by providing compensation to the victims of some accidents. It reduces the secondary costs of the accidents for which it allows compensation by spreading the costs of such accidents

16. Some proof of this can be found in the data concerning injuries in the workplace. Large employers have a greater economic incentive to create a safe workplace than small employers because the insurance premiums paid by large employers are affected by their accident rate while the premiums of small employers are not. Yet, small employers tend to have lower accident rates than large employers. J. Chelius, Workplace Safety and Health: The Role of Workers' Compensation 26 (1977). Obviously, something independent of economic incentive must explain this result.

over a larger group. Finally, it assists the market for safety by forcing internalization of some accident costs to entities that are assumed to have the ability to reduce those costs through greater spending on safety. This analysis will focus exclusively on the safety-enhancing goal of tort law, but the implications of the analysis are broad. If tort law does not serve the goal of encouraging spending on safety, it may be that safety enhancement should be abandoned as a goal of tort law. It is much easier to establish and administer a mechanism designed to serve only the goals of compensation and secondary accident cost reduction than it is to attempt to pursue all three goals with the same legal mechanism. Indeed, at least one nation generally comparable to the United States in terms of social values and goals recently has made the decision to abandon safety enhancement as a goal of tort law, and other nations are considering similar steps.[17]

A. Advantages of Tort Law

At least in theory, tort law has all the advantages of the market as a means of encouraging spending on safety. Chief among those advantages is, of course, accommodation of individual tastes for safety risks, and the resulting freedom of each individual to purchase that degree of safety that corresponds to his or her tastes. Tort law, in addition, addresses the externalities problem by forcing individuals and firms with theoretical control over safety to internalize the costs of accidents.

Internalization of accident costs can enhance the operation of the safety market in two related ways. First, forcing individuals and firms with a measure of control over accident costs to absorb those costs provides an incentive to reduce the accident rate, the consequences of accidents, or both. If the costs of accidents are calculated accurately, internalization of those costs to the entity with control over accident costs should produce an optimal level of spending to reduce accident costs. The entity bearing the costs of accidents will have an incentive to keep spending to reduce those costs up to the point at which marginal cost of accident cost avoidance equals marginal cost of accidents. Second, by forcing firms whose products or services are responsible for accident costs to ab-

17. *See* Marks, *A First in National No-Fault: The Accident Compensation Act of 1972 of New Zealand*, 47 AUSTL. L.J. 516 (1973); Vennel, *The Scope of National No-Fault Accident Compensation in Australia and New Zealand*, 49 AUSTL. L.J. 22 (1975); *Report of National Committee of Inquiry Into Compensation and Rehabilitation in Australia*, 48 AUSTL. L.J. 413 (1974) [hereinafter cited as *Report*].

sorb those costs, society forces the prices of goods and services to reflect all costs required to make them available, including costs of accidents. The higher price, in turn, reduces accident costs by inducing consumers to switch from goods and services with high accident costs to functional substitutes with lower accident costs. Failure to internalize all accident costs, then, amounts to a subsidy for high accident cost goods and services, and an indirect subsidy for accidents.

B. Limits of Tort Law

For tort law to assist the market for safety in the manner described, it must accomplish two critical subgoals. First, calculation of the costs of accidents must be accurate. That is, the accident costs internalized to activities must reflect a reasonable approximation of the value society places on avoiding various consequences of accidents.[18] Second, tort law must internalize costs of accidents to entities that are in a position to control those costs. In the first step of this analysis, the second subgoal is assumed to be achieved, or at least achievable. The focus of inquiry is thus entirely on the manner in which tort law calculates the costs of accidents. I will analyze the extent to which tort law actually accomplishes the second subgoal after discussing the manner in which tort law calculates accident costs.

1. Calculating the Costs of Accidents

Rather than attempting an exhaustive survey of the law of damages in tort, this analysis will be confined to an overview of the manner in which tort law values human life—one of the more difficult accident cost valuation problems. Courts often disclaim any attempt to place a value on human life when they determine dam-

18. If Pareto optimality were retained as the allocative goal of tort law, individual valuations of accident consequences would have to be reflected in tort damage calculations. However, placing individualized values on many accident consequences is analytically impossible for the reasons discussed in the text accompanying notes 90-100 *infra*. Moreover, any attempt to place individualized values on accident consequences raises the transaction costs of the valuation process, while simultaneously causing psychic injury to society by creating valuations that vary with the distribution of wealth. Thus, the Pareto optimality goal is compromised to the extent of substituting social values for individual values of accident consequences. Of course, measuring social values is also impossible analytically and empirically. Therefore, the most practical surrogate for both individual value and social value is some measure of average individual value derived from statistical analysis of individual conduct. *See* text accompanying notes 90-100 and note 100 *infra*.

ages in wrongful death actions.[19] In a functional sense, however, courts must necessarily place an implicit value on life when they determine such damages.[20] If tort law assists the market for safety in the manner hypothesized earlier, the level of damages assessed for a particular consequence of accidents will determine the level of spending to avoid that consequence. The courts are providing price signals to firms positioned to avoid accident costs, indicating that they should spend a particular amount of money to avoid a particular consequence of accidents.

The law of damages for wrongful death is complex. It has as many variations as there are jurisdictions whose laws govern it. For purposes of this analysis, however, it is not necessary to pursue all the subtleties of wrongful death law; it will suffice to develop an overview of the major factors that determine the magnitude of a wrongful death award and the general range of damages awarded for broad categories of lives.

There are two approaches to calculating damages for wrongful death—loss to survivors and loss to estate.[21] The two approaches differ to some extent in concept and in the factors considered in determining damage awards. Many major elements of damages are common to both approaches, however, and the amount of damages awarded does not seem to vary greatly among jurisdictions depending upon the theory of valuation used.[22]

The loss-to-survivors approach has been adopted in a majority of jurisdictions. In these states, the basic function of judge and jury is to determine the amount of money (or equivalent goods and services) that the victim would have provided to his dependents if his life had not been prematurely terminated. The minority loss-to-estate approach requires the judge and jury to determine the

---

19. *E.g.*, Florida Dairies Co. v. Rogers, 119 Fla. 451, 455-56, 459, 161 So. 85, 87-88 (1935).

20. Since wrongful death law has a statutory hase, state legislatures actually play a dominant role in determining the amount of damages recoverable for wrongful death. The courts, however, must interpret and apply these statutes.

21. For an encyclopedic description of the basis for calculating wrongful death damages, *see* 1 S. SPEISER, RECOVERY FOR WRONGFUL DEATH (2d ed. 1975). *See also* W. PROSSER, LAW OF TORTS 902-09 (4th ed. 1971).

22. There is a large variation among jurisdictions in the magnitude of wrongful death awards, but the variation does not correlate well with the theory of valuation used in each jurisdiction. *See Million Dollar Jury Awards*, National Law Journal, June 18, 1979, at 1, 12-13. *See also* Finkelstein, Pickrel & Glasser, *The Death of Children: A Nonparametric Statistical Analysis of Compensation for Anguish*, 74 COLUM. L. REV. 884 (1974); INTERAGENCY TASK FORCE ON PRODUCT LIABILITY: FINAL REPORT II-57 (1978) [hereinafter cited as FINAL REPORT].

amount of money the victim would have earned and left in an estate if his life had not been prematurely terminated. For purposes of this analysis, the characteristics shared by the two approaches are far more important than their distinguishing features.

In most wrongful death actions in which the victim is an adult, the largest element of damages by far is the present value of the future net earnings of the victim.[23] Depending upon the jurisdiction, those earnings are included to the extent they would have contributed to the support of the victim's dependents or would have been passed on to the victim's heirs.[24] By either measure, this makes certain characteristics of the victim extremely important in calculating the cost of premature loss of life.

For people who have already begun a career, the measure of damages is related to age. Other things being equal, a younger victim will have a future earnings stream greater than an older victim, and thus a larger damage award. This valuation may be consistent with prevailing social values. The amount of damages also relates to the future earning power of the victim, with the result that the life of a salaried executive is valued more highly than that of a factory worker. It is at best questionable whether this distinction is consistent with prevailing social values. One must wonder whether society really wants to place no value on the life of a person who has no future earning power or to spend five or ten times as much to protect the lives of highly paid executives as is spent to protect the lives of laborers. Of course, the origin and persistence of this distinction as a basis for valuing life in the tort law context is almost certainly attributable to its consistency with the compensation goal.

Another factor that can greatly influence the valuation of life in the tort system is the existence and characteristics of the dependents of the victim. In most jurisdictions, there are no damages if there are no dependents, and the future earnings component of damages stops accruing whenever, as in the case of a dependent minor child, the cessation of dependency status can be predicted at some future time.[25] Again, the goal of compensation provides a rationale for tying the value of life to the existence and status of the

---

23. The standard method of calculating loss of future earnings is set forth in Curtis & Wilson, *Determining Loss of Earnings from Impairment or Death*, 37 ALA. LAW. 221 (1976); Curtis & Wilson, *A Model to Project Loss of Earnings from Impaired or Destroyed Capacity*, 6 ATL. ECON. J. 41 (July 1978).

24. 1 S. SPEISER, *supra* note 21, at 116-17, 217-19.

25. *Id.* at 217-19.

victim's dependents. Viewing tort law as a means of encouraging spending on safety, however, the relationship between the existence of dependents and the implicit valuation of life in tort law does not seem to reflect society's values. Surely society does not want to provide a price signal indicating that the life of a person with no dependents has no value.

Traditionally, so-called "nonmonetary" factors were not considered in calculating damages for wrongful death. In recent years, a distinct trend toward recognition of nonmonetary factors, such as loss of companionship and even mental angnish, has emerged.[26] In the bulk of modern cases involving wrongful death of adult wage earners, however, the present value of expected future support to surviving dependents continues to be the major component of damages, and the amount awarded for nonmonetary factors remains modest in all but a few highly publicized cases.

Some of the irrationalities inherent in tort calculations emerge from an analysis of the manner in which damages are determined, but the true anomalies become starkly apparent when the results of that process are analyzed. Consider the wrongful death of a child. While the adult wage earner's life is assigned a relatively high value in most cases, the life of a child is given little value in tort law. The general approach to determining damages for wrongful death should actually yield a negative value for the life of a child, but judges and juries usually "cheat" in this area and find some basis to assign a positive value to the life of a child.[27] Still, the results of the process imply a very low value for the life of a child. The average award for wrongful death of a child was determined in a recent study to be $28,355.[28] Thus, the signal given a firm is that it should spend up to, but no more than, $28,355 on safety per child's life saved by its expenditures. It is inconceivable that society actually desires to establish a market in safety that assigns such an absurdly low value to the life of a child. This valuation also is absurd relative to other implicit valuations in tort law. Indeed, the average damage award in a personal injury case is $181,401,[29] and the average damage award for wrongful death of an adult male is $240,228.[30] It is unlikely that society really wants to

---

26. *Id.* at 308-22.

27. *Id.* at 509-19; W. PROSSER, *supra* note 21, at 909; Finkelstein, Pickrel & Glasser, *supra* note 22, at 890.

28. Finkelstein, Pickrel & Glasser, *supra* note 22, at 887.

29. FINAL REPORT, *supra* note 22, at II-56.

30. *Million Dollar Jury Awards, supra* note 22, at 1, 12-13.

encourage firms to spend six times as much to avoid personal injury to an adult and ten times as much to avoid the death of an adult male as it spends to avoid the death of a child. Nevertheless, by merging the compensation decision with the liability decision, and then selecting compensation as the more important goal, the tort system has precisely this effect.

The argument might be made that the anomalous relative values placed on life versus serious injury, life of a child versus life of an adult wage earner, etc. are of no great importance in determining whether tort law creates a rational and effective market for safety because firms have very limited ability to make decisions on safety that reflect fine distinctions among the potential consequences of accidents. In other words, it is practically impossible for a firm to take measures that avoid serious injury or death to wage earners without also protecting children. If this view is correct, it follows that irrational differences in the valuation of particular consequences of accidents do not create functional aberrations in the market for safety as long as the aggregate valuation of the consequences of accidents is rational.

There are two reasons why this defense of current tort law cannot be accepted. First, there are many circumstances in which firms can determine their optimum level of spending on safety based upon the specific type of individual whose safety is at stake or the particular type of injury affected by a safety decision. A clear example is the manufacture of children's clothing. The rational children's clothing manufacturer can ignore the tort law signals concerning the relatively high value attached to serious injuries or death of an adult wage earner and base its decisions on expenditures for features such as resistance to fire entirely upon the $28,355 value tort law places on the life of a child. Firms often can choose as well between risks of injury and risks of death. For instance, a toy manufacturer might spend money to redesign a toy so that its edges cannot cut a child, but decline to analyze the toxicity of a toy part that is small enough to ingest. The tort system's relative valuations of injury versus loss of life of a child make this decision rational. Indeed, there are many broad areas in which tort law's bizarre relative valuations of accident costs have a material effect upon safety spending decisions. For instance, manufacturers of airplanes, intercity buses, and school buses confront very different tort-derived incentives to spend on safety because of the wide disparities in the average earning capacities and dependency status of their respective passengers.

The second reason for rejecting the defense of tort law's methods of valuing accidents is even more fundamental. There is a consistent downward bias in tort law valuations of important consequences of accidents, such as loss of life. By failing to include as elements of damages such very real costs as the grief of relatives and friends, tort law understates accident costs and thereby creates insufficient incentives for safety.[31]

2. Internalizing Costs in Tort Law

In order to provide an effective market for safety, tort law must both calculate accident costs and internalize those costs to individuals and entities that can control the magnitude of accident costs either by avoiding accidents altogether or by reducing their consequences. The preceding discussion focused solely on the quantification process. The next step in evaluating the effectiveness of tort law is to analyze the actual cost internalization process. Theoretically, tort law forces internalization of all accident costs considered in the damage calculation process to individuals or entities who, by virtue of a judicial finding of "fault," are believed to be in a position to control accident costs. Empirical evidence demonstrates conclusively that the actual internalization process differs dramatically from theory.

There are many ways in which tort law either fails to internalize accident costs in the first instance or permits those costs to be reexternalized. A major source of tort law's failure to internalize accident costs is simply the victim's failure to make a claim for compensation. In most cases, in which the victim bears the accident costs, the victim externalizes those costs through social welfare programs and first party insurance. The possible explanations for the failure to make claims include the difficulty of proving fault, the difficulty of proving causation, the high transaction costs of the tort system, availability of compensation from other sources (first party insurance, social welfare programs, etc.), potential inability to collect from a judgment-proof defendant, the belief that it is wrong to sue someone unless they have done something "bad," and ignorance of the fact that the victim's injury was caused by some other party or that compensation is available from that party. Many of these factors will be discussed in subsequent sections of this Article. I know of no way to isolate the effect of each, but several studies demonstrate tbat their combined effect is to

31. *See* Posner, *A Theory of Negligence*, 1 J. LEGAL STUD. 29, 47 (1972).

undermine significantly the tort system's cost internalization function.

Only a small fraction of personal injuries arising from various causes actually yield a claim for compensation. Ten percent of product-related injuries give rise to claims for compensation.[32] The analogous figure for injuries to patients resulting from the therapeutic process is one percent,[33] and, when the tort system was still functioning in the employment context, between six and thirty percent of employment-related injuries resulted in claims for compensation.[34] These figures may tend to overstate the extent of externalization of accident costs attributable to victim failure to file a claim, since high cost accidents are more likely to result in a claim for compensation than low cost accidents. It is apparent, however, that failure to file a claim is a major source of externalization of accident costs in the tort system.

Costs are further externalized by the tendency of many victims to settle for compensation well below the actual costs of an accident.[35] This pattern results from a combination of factors, including the victim's desperate and immediate need for money, the uncertainty of success in pursuing a tort remedy, the cost of processing a tort claim, and, above all, the amount of time required to obtain any compensation through judicial resolution of a contested claim. The victim (or the victim's survivor) often has little choice but to be content with a combination of benefits from external sources, such as social welfare and first party insurance, supplemented by a few thousand dollars in settlement of a disputed tort claim.

Another major source of cost externalization is the difficulty of proving fault. Although tort law has undergone a number of changes in recent decades designed to ease the burden of proving fault, the tort system nevertheless remains based almost exclusively upon fault in some form.[36] The magnitude of externalization

---

32. FINAL REPORT, *supra* note 22, at VII-212 to -13.

33. Bernzweig, *Some Comparisons Between the Medical Malpractice and Products Liability Problems* in INTERAGENCY TASK FORCE ON PRODUCT LIABILITY: SELECTED PAPERS 430-31 (1976) [hereinafter cited as SELECTED PAPERS].

34. J. CHELIUS, *supra* note 16, at 19.

35. *Id.* at 61.

36. The so-called strict liability in tort adopted for product-related injuries is merely a fault-based system in which the method of determining fault differs from that employed in traditional negligence actions. *See* Westerbeke & Meltzer, *Comparative Fault and Strict Products Liability in Kansas: Reflections on the Distinction Between Initial Liability and Ultimate Loss Allocation*, 28 KAN. L. REV. 25 (1979). *See also* FINAL REPORT, *supra* note 22,

attributable directly to the difficulty of proving fault can in part be seen by comparing the number of particular accidents found by an objective research study to be caused by third party violation of a safety rule with the number of similar accidents in which costs were actually shifted to a third party based upon a finding of fault. Comparative data suggest that fault is actually proven in only about ten percent of incidents involving the fault of third parties.[37]

Persuasive anecdotal evidence that the difficulty of proving fault externalizes a high percentage of accident costs is available in the literature on the tort litigation concerning the prescription drug MER/29.[38] Over 5000 people suffered serious injury, including blindness, from using MER/29. Approximately 1500 victims filed tort claims against the manufacturer. The principal factual issue contested in the litigated cases was whether the manufacturer either negligently or intentionally failed to notify consumers and the Food and Drug Administration of test results that the manufacturer knew, or should have known, indicated the potential for serious adverse side effects. Most of the cases were settled based on the results of a few reported cases. In a majority of the reported cases, the manufacturer escaped liability based upon findings either that the drug raised no risks or that the manufacturer had no reason to know of such risks.[39] Yet, subsequent studies and litigation established beyond doubt the knowledge and fault of the manufacturer. In one of the later reported civil cases, the manufacturer was found to have directed its employees in knowingly, maliciously, and recklessly failing to disclose serious risks.[40] In addition, the company and several of its employees ultimately were indicted and pleaded nolo contendere to criminal charges of submitting false data to, and withholding data from, the Food and

---

at III-10.

37. R. SMITH, THE OCCUPATIONAL SAFETY AND HEALTH ACT 66-67 (1976). Data on accident cause produced by objective investigation are far more likely to reflect actual fact tban the results of fault-based tort litigation. *See* G. CALABRESI, *supra* note 4, at 259-60.

38. For descriptions of the MER/29 incident and resulting litigation, see M. MINTZ, BY PRESCRIPTION ONLY 230-47d (2d ed. 1967); Merrill, *Compensation for Prescription Drug Injuries*, 59 VA. L. REV. 1, 22-23, 40-43 (1973); Rheingold, *The MER/29 Story—An Instance of Successful Mass Disaster Litigation*, 56 CALIF. L. REV. 116, 117-21 (1968).

39. *See, e.g.*, Lewis v. Baker, 243 Or. 316, 413 P.2d 400 (1966), *overruled on other grounds*, McEwen v. Ortho Pharmaceutical Corp., 270 Or. 375, 398, 528 P.2d 522, 534 (1974); Cudmore v. Richardson-Merrell, Inc., 398 S.W.2d 640 (Tex. Civ. App. 1965), *cert. denied*, 385 U.S. 1003 (1967). *See also* Merrill, *supra* note 38, at 41.

40. Toole v. Richardson-Merrell, Inc., 251 Cal. App. 2d 689, 60 Cal. Rptr. 398 (1967). *See also* Roginsky v. Richardson-Merrell, Inc., 378 F.2d 832 (2d Cir. 1967).

Drug Administration.[41]

The difficulty of proving causation is another major reason that accident costs tend to be externalized. Indeed, causation problems have led to an almost complete breakdown in the tort system as a mechanism for internalizing accident costs in several important areas. Diseases caused in part by the toxic properties of chemicals contained in products or in the workplace rarely form the basis for successful tort claims. The judicial system cannot contend with causation problems in the context of consequences that have long developmental periods and whose etiology suggests the likelihood of joint causation.[42] More generally, the tort system has extreme difficulty coping with statistical indications of causation. There are many circumstances in which a rational decisionmaker can go no farther than to conclude, for example, that forty percent of accidents of the type at issue are caused by one factor and forty percent by another.[43] In this large class of accidents, the judicial system typically externalizes accident costs by refusing recovery to the victim who, in turn, externalizes the bulk of the costs through first party insurance or social welfare programs.

Of those accident costs internalized initially through the tort system, the vast majority are reexternalized through liability insurance. In theory, liability insurance assists tort law in achieving its secondary loss minimization goal, while compromising only slightly the safety enhancement goal. As long as the cost of insurance is spread in proportion to the varying risks created by particular activities and firms, the availability of liability insurance should not frustrate the goal of encouraging safety. The problem in practice is that insurance costs reflect only crudely, if at all, variations in risks of accidents among firms and activities.

The recent interagency study of product liability insurance provides extensive data demonstrating the high degree of accident cost externalization produced by liability insurance. Only a small fraction of product liability insurance is made available at a premium calculated on the basis of the risks associated with the particular insured.[44] Indeed, a substantial portion of liability insur-

41. *See* M. MINTZ, *supra* note 38, at 243; Merrill, *supra* note 38, at 23.

42. *See* J. CHELIUS, *supra* note 16, at 22-23; FINAL REPORT, *supra* note 22, at VII-221 to -22; R. SMITH, *supra* note 37, at 83.

43. *E.g.*, Quintal v. Laurel Grove Hospital, 62 Cal. 2d 154, 397 P.2d 161, 41 Cal. Rptr. 577 (1964).

44. Only very large companies are able to purchase insurance at premiums that are "loss-rated," that is, determined with specific reference to the risks associated with the par-

ance is made available only through comprehensive all-risk policies that provide no basis for determining the premium associated with various risks.[45] Although most insurance companies maintain that premiums reflect differences in the risks of accidents,[46] most firms that purchase liability insurance believe there is no relationship between the reduction of product-related accident risks and the liability insurance premium they must incur.[47] Moreover, studies have been unable to detect a correlation between accident cost avoidance measures and liability insurance premiums except in the case of very large firms and a few common products.[48] Thus, when the liability insurance mechanism is added to the tort system, tort liability appears in most instances to internalize costs to such a large group (all purchasers of products liability insurance or, in some cases, all members of a large industry) that the effect is reexternalization. As a result, the incentive for safety theoretically created by the tort system is all but eliminated.

The explanation for the high degree of cost reexternalization lies in the actuarial techniques necessary to relate insurance premium costs to accident costs. "Loss-rating" an insurance policy requires considerable historical data on the cost of claims arising from a particular firm or activity.[49] The tort system produces accident cost data very slowly because of the low claim rate relative to the accident rate and the slow progress of tort litigation through the judicial system. Moreover, historical data on accident costs as measured by the tort system are poor predicters of the future accident costs of a firm or activity. The rules for determining liability and damages in fields such as product liability law are so complex, and the results of litigation so unpredictable, that litigation results are actuarially useless until a great many cases have been concluded. In terms of both liability and, perhaps even more importantly, the magnitude of the award, actuaries perceive so little rela-

---

ticular firm. FINAL REPORT, *supra* note 22, at V-12. Approximately another ten percent of product liability insurance coverage is available at premiums calculated with reference to specific product lines. This tends to be available only for a limited number of common, low-risk products. *Id.* at V-10, -11. The basis for calculating the premiums for most product liability coverage is obscure and appears to bear only a remote relationship to specific risks. *Id.* at V-9 to -12.

45. *Id.* at V-11.

46. *Id.* at VII-177 to -78.

47. *Id.* at IV-12, VI-52.

48. *Id.* at VII-177.

49. *Id.* at V-48 to -49. *See also* Clements, *Commentary on the Insurance Considerations in the Federal Interagency Task Force Report on Product Liability*, in SELECTED PAPERS, *supra* note 33, at 61-62.

tionship between the results of past tort litigation and factors that can form the basis for predictions concerning future awards that an enormous amount of historical data is required to loss-rate a policy.[50] Yet the paucity of claims and the slow pace of tort litigation retard development of an adequate data base. As a result, loss-rating is possible for only very large companies or for broad activities, such as an entire manufacturing industry.

Many aspects of the tort system thus combine to externalize accident costs: inadequate valuation of the consequences of many accidents, failure to make a claim, inability to prove fault, inability to prove cause, and liability insurance. When the interrelationships of these powerful externalizing forces are considered, it becomes clear that tort law actually serves the goal of creating a market for safety very poorly indeed. For a system whose transaction costs are approximately equal to the total amount of compensation provided,[51] tort law must be considered an extraordinarily inefficient and ineffective method by which to obtain a rational level and pattern of spending on safety.

C. *Future Effectiveness of Tort Law*

It is difficult to be sanguine about the future of tort law as an efficient and effective means of encouraging safety. Indeed, there are good reasons to expect that its current appalling inefficiency and ineffectiveness will become more pronounced over time. Tort law is becoming vastly more complicated with the emergence of comparative negligence. This increased complexity will have two effects. It will increase the transaction costs of the tort system, and it will confound the actuarial process by introducing additional sources of predictive uncertainty. The first will reduce the efficiency of the system, while the second will increase the degree of reexternalization through liability insurance. New social welfare programs now under serious consideration, such as national health insurance, will externalize an even greater proportion of accident costs, thus further reducing the effectiveness of tort law as a means of encouraging safety.

D. *The Utility of Incremental Changes in Tort Law*

Most changes in tort law now under consideration, such as changes in statutes of limitations or tinkering with rules of liability

50. *See* FINAL REPORT, *supra* note 22, at VII-16 to -20, -64 to -65.
51. *Id.* at V-25.

or damages,[52] would have virtually no effect on the problem of inadequate safety incentives. Minor palliatives cannot touch the endemic inadequacies in the tort system. It is possible to conceive, however, of more drastic changes in tort law that, at least in theory, could improve its effectiveness while retaining the present institutional structure. For example, liability insurance could be severely limited or abolished, the basis for recovery could be broadened substantially to approximate a no-fault methodology, and damages could be calculated so that the consequences of accidents are translated into costs that reflect more accurately societal values. In theory, this combination of changes would eliminate the defects in the tort system that cause it to be ineffective as a mechanism for encouraging safety. Unfortunately, there are many reasons to believe that such a total revamping of tort law would fall far short of its theoretical promise, and that further, it would create a whole new set of collateral problems.

One reason that such dramatic changes might not succeed is that individual decisionmakers tend to emphasize the short-term consequences of their decisions and to deemphasize the long-term consequences, a phenomenon known as the "Faust effect." The existence of this "effect" has long been recognized by students of accident law.[53] It explains the tendency of individuals to discount at an irrational level many safety risks whose consequences are not likely to be manifested until some time after exposure to the risk. There is growing evidence that firms are also materially affected by this tendency. As the cost of product liability insurance has increased in recent years, many firms have "gone bare"—that is, they have simply stopped insuring.[54] Thus, rather than responding to increased accident costs by attempting to reduce those costs, as tort theory anticipates, these firms have chosen to avoid all current costs of accidents and to expose themselves to staggering potential future costs. The data also suggest an explanation for this phenomenon. The "going bare" syndrome is widespread among, and limited to, small and medium-sized firms.[55] Many of these firms could not possibly cover a major damage award or a cluster of large

52. *See, e.g.*, Draft Uniform Product Liability Law, 44 Fed. Reg. 2995 (1979).

53. *See* G. CALABRESI, *supra* note 4, at 57.

54. FINAL REPORT, *supra* note 22, at III-2, -17. *See also* Letter from Ralph B. Baldwin, Pres., Oliver Machinery Co. to Edward Barrett, II, Project Director, Interagency Task Force on Product Liability, SELECTED PAPERS, *supra* note 33, at 43.

55. FINAL REPORT, *supra* note 22, at III-17.

awards resulting from a particular activity or product.[56] Given the mortality rate for such firms and the protection of personal assets of firm owners afforded by the corporate form and bankruptcy laws, it may be perfectly rational for them to ignore the potential future costs of accidents. In any event, a large proportion of small and medium-sized firms play the role of Faust to the extent that they will not respond to speculative future tort liability by making large current expenditures on accident cost avoidance. Indeed, the same study that showed a high percentage of small and medium-sized firms "going bare" found that, although insurance costs and tort awards are increasing, very few small and medium-sized firms have taken measures to increase the safety of their products.[57]

The limited cognitive ability of decisionmakers within firms also suggests that the potential advantages of revamping tort law would not be fully realized. For increased exposure to potential tort liability to produce a corresponding increase in accident cost avoidance expenditures, it is necessary to assume that individual firms have sufficient knowledge of the hazardous characteristics of their products and activities to be aware of the risks they are incurring and to act accordingly. Again, particularly for small and medium-sized firms, this assumption is not valid. For instance, a small chemical firm has only limited toxicological expertise. If the firm cannot predict future costs, it surely cannot be expected to take measures to avoid or reduce those costs.

Finally, causation problems will continue to undermine the practical advantages of tort law revision. Even if "fault" is eliminated as a criterion, the courts would still face the difficult task of determining causation in each case. This creates two significant problems. First, individualized determinations of causation would continue to produce high transaction costs, high uncertainty in predicting future tort costs, and delay in handling claims. Each of these would impair the efficiency and effectiveness of the revised tort system. Second, decentralized individual determinations of cause would not internalize accident costs to the entity with the greatest ability to control accident costs. Professor Calabresi has demonstrated persuasively that there is a poor correlation between judicial determinations of fault and identification of parties in the best position to control the costs of accidents.[58] This poor correla-

56. *Id.* at VI-34; Remarks by Professor Douglas Olson, U.S. Dept. of Commerce Symposium on Products Liability (July 21, 1976), SELECTED PAPERS, *supra* note 33, at 210-11.

57. FINAL REPORT, *supra* note 22, at IV-4.

58. G. CALABRESI, *supra* note 4, at 244-65.

tion is attributable to three factors. First, many parties who are found to be at fault lack the information or cognitive capabilities to predict accident costs. Therefore, they cannot control future accident costs.[59] Second, the fault that is often the basis for determining liability is simply an instance of routine individual carelessness or inattention, the occurrence and frequency of which cannot be affected by expectations of liability.[60] Third, tort litigation frequently does not even bring before the court the party who is in the best position to control the costs of accidents.[61] This third factor obviously is equally true of causation, and there are reasons analogous to the first and second factors that suggest a low correlation between judicial determinations of causation and identification of the entity best positioned to control the costs of various types of accidents.[62] Moreover, decentralized individual determinations of cause still could not cope with the recurring problem of statistical cause and joint cause alluded to earlier.

Even if modifying tort law would not produce a truly effective

---

59. *Id.* at 245.

60. *Id.* at 256. *See also* 86 HARV. L. REV. 923, 930-31 (1973).

61. G. CALABRESI, *supra* note 4, at 256.

62. Consider, for example, the manner in which costs might be allocated for typical motorcycle accidents. The largest class of motorcycle accidents result from failure of the operator of an automobile to yield tbe right-of-way to a motorcycle. The fault-based system assigns the costs of these accidents to individual automobile operators who, in turn, externalize them to all automobile operators througb liability insurance. Even without externalization through insurance, placing the costs of these accidents on the automobile operators involved is unlikely to have any effect on the incidence of such accidents. In-depth studies of the autemobile operators involved in such accidents demonstrate that they simply do not see the motorcycle. *See They Have Eyes To See,* CYCLE WORLD, Oct. 1979, at 21. Obviously, no deterrent can be effective in encouraging automobile operators to yield the right-of-way to something they do not see. Instructing the court to ignore fault and to focus on causation in its classic sense would not be likely to improve the results. The court probably still would find that the automobile operator's conduct "caused" the accident. Even if the court found that the motercycle operator's conduct "caused" the accident, allocating costs of such accidents to motorcyclists would be unlikely to reduce the incidence or costs of such accidents. The motercyclist will not modify his conduct to avoid accidents of this type for several reasons. First, he can externalize most of the costs of accidents through a combination of insurance and social welfare benefits. Second, and more fundamentally, the motorcyclist is unlikely to be aware that lack of visibility of motorcycles to automobile operators creates a large risk of accidents. Centralized identification of the "cause" in the broader sense of accidents of this type, as proposed in the text accompanying note 131 *infra,* would result in allocation of all motorcycle accident costs attributable to lack of visibility of motorcycles to motorcycle manufacturers, with significant differences in the incidence of involvement of a particular manufacturer's product reflected in proportionate changes in the accident costs assigned to that manufacturer. Such an allocation of accident costs would produce a meaningful reduction in the costs of motorcycle accidents with relatively modest additional spending on accident cost avoidance, since it would motivate manufacturers to seek ways to enhance motorcycle visibility (for example, by changes in paint, lighting, etc.).

market for safety, the changes suggested might produce enough improvement to make them worth undertaking were it not for a number of collateral problems that could also be expected to result from such a revamping of tort law. Taking the most obvious disadvantage first, prohibition of or stringent restrictions on liability insurance would substantially sacrifice the tort law goal of reducing the secondary costs of accidents. Very high dislocation costs could attend the elimination of liability insurance as a cost-spreading device. Yet, the reexternalization effect of insurance is one of the main evils of the present system that the proposed changes are designed to correct.

The other potential disadvantages of tort law revision are less obvious but, in a sense, are more fundamental. Because many products and activities that are dangerous are also beneficial, there is a distinct possibility that forcing complete internalization of accident costs to those entities that can best control accident costs would *not* produce optimum allocation of resources in important segments of the economy.[63] Consider, for example, a hypothetical prescription drug. Assume the drug is only used to treat a serious condition that is impervious to any other form of treatment. The drug is effective for some people, but it has fatal side effects for others. The net effect of the drug is to save the lives of three people for every one it takes. Assume also that the modified tort system values each life at $500,000. Under the modified tort system, the manufacturer of the drug almost certainly would be identified as the party with the best opportunity to control the costs of accidents associated with the drug, so the costs of the loss of life associated with the drug would be internalized to the manufacturer. In theory, this internalization should produce an optimal allocation of resources, but in practice the effect probably would be to force off the market a drug that saves three lives for every one it takes—a result that would be hard to defend under any concept of optimal resource allocation.

With full internalization of the accident costs of the drug, the cost of the drug would be approximately $166,667 for each patient.[64] At this price, very few individuals could afford to purchase the drug. Even though society has chosen to value each life af-

63. Professor Posner has argued that transition to strict liability would frustrate achievement of the allocative efficiency goals of tort law in other respects as well. Posner, *Strict Liability: A Comment*, 2 J. LEGAL STUD. 205 (1973).

64. I am assuming that the costs of manufacturing the drug are negligible compared with the accident costs the manufacturer is required to bear.

fected by the drug at $500,000, it is unlikely that any potential lender would place even one-third that value on most individuals' future income stream as collateral. Because the manufacturer is unable to internalize the beneficial externalities associated with the drug and is forced by the tort system to internalize its accident costs, society's resources are seriously misallocated. This misallocation could only be avoided either by forcing internalization of a lower proportion of accident costs or by providing a subsidy to account for the drug's beneficial externalities.

Even the present system, with its only partial cost internalization, may result in a serious misallocation of resources when the activity in question produces substantial beneficial externalities. One manifestation of this phenomenon is the extraordinarily high cost of malpractice insurance for surgeons and anesthesiologists that has temporarily jeopardized the continued availability of surgery in some jurisdictions. Many more misallocations could be expected if tort law were reformed in a manner that forced greater internalization of accident costs, since there are beneficial externalities associated with most activities.[65]

At present, tort law attempts, through its rules for determining fault, to avoid misallocation of resources that results from the combination of full internalization of accident costs and large beneficial externalities. Judge Hand's formula for determining whether conduct is negligent[66] and the Comment k exception to product liability[67] should produce a finding of no liability, and hence, no internalization of accident costs in circumstances when existence of large beneficial externalities makes full internalization of accident costs undesirable. Here again, however, theory and fact diverge. Even assuming that the legal rules for liability focused the attention of the decisionmakers on the right question,[68] it is unlikely

65. *See* Bowman, *The New Haven: A Passenger Railroad for Nonriders*, 9 J.L. & ECON. 49, 50 (1966).

66. "[I]f the probability be called P; the injury, L; and the burden, B; liability depends upon whether B is less than L multiplied by P . . . ." United States v. Carroll Towing Co., 159 F.2d 169, 173 (2d Cir. 1967).

67. "There are some products which, in the present state of human knowledge, are quite incapable of being made safe for their intended and ordinary use. These are especially common in the field of drugs. . . . Such a product, properly prepared, and accompanied by proper directions and warning, is not defective, nor is it *unreasonably* dangerous." RESTATEMENT (SECOND) OF TORTS § 402A, Comment k (1965) (emphasis in original).

68. Judge Hand's formula requires simply a cost-benefit analysis. Thus, it does ask the right question: whether total societal costs associated with a safety precaution are greater or less than total societal benefits. Unfortunately, in practice courts tend to focus only on the immediate burdens of safety precautions on the parties before the court and to ignore

that individual judges and juries could determine whether a product or service creates substantial beneficial externalities. Moreover, decentralized decisionmaking cannot deal with the common situation in which the existence of beneficial externalities requires a reduction of the amount of accident costs that are internalized to an activity, rather than complete avoidance of accident cost internalization. In any event, elimination of fault as a criterion for tort compensation would require creation of some new means of dealing with this potentially significant problem.

Another related reason for skepticism as to the desirability of modifying tort law to obtain full internalization of accident costs lies in the potential foreign trade effects of such a change. It is, of course, axiomatic in comparative advantage theory that all nations benefit from free international trade. Significant differences among nations in the degree of internalization of the costs of products, however, can distort the operation of comparative advantage theory. If the United States forces internalization of a much higher percentage of accident costs associated with its products than do other countries, United States exports may decrease while its imports increase even for products in which the United States has an initial comparative cost advantage.[69] With a system that produces full internalization of accident costs, this distortive effect on foreign trade could become substantial. Even with the partial internalization of the current tort system, product liability insurance rates of fifteen percent of total manufacturing costs have been reported for some products.[70]

In summary, it is not clear that a major overhaul of tort liability and damage rules would create a more effective market for safety. In fact, as long as the present institutional structure of tort decisionmaking is retained, it is likely that such a revision would fall well short of its theoretically attainable goals and would cause significant collateral problems. A major source of the inefficiency and ineffectiveness of tort law—decentralized decisionmaking in

---

broader burdens on society. This has the same effect as ignoring beneficial externalities associated with activities. Comment k does not even ask the right question. It suggests no need to inquire into the accident costs or the beneficial externalities associated with a product that is "unavoidably unsafe."

69. *See generally* I. WALTER, INTERNATIONAL ECONOMICS OF POLLUTION (1975).

70. FINAL REPORT, *supra* note 22, at VI-27.

individual situations—would remain.

E. Discarding Safety Enhancement as a Goal of Tort Law

The limited effectiveness of tort law as a means of encouraging safety has given rise to suggestions that this putative goal be abandoned entirely in favor of a system designed only to provide compensation and minimize the secondary costs of accidents. Such suggestions have considerable appeal, largely because once reduction of primary accident costs is abandoned as a goal, it is relatively easy to devise a system that provides compensation and minimizes secondary costs far more effectively and efficiently than tort law.

New Zealand recently enacted legislation that abolishes all personal injury actions and substitutes a system of administrative compensation for all victims of accidents. Australia is seriously considering a similar compensation scheme.[71] Under these comprehensive no-fault systems, the victim is compensated in accordance with predetermined schedules that include all medical costs, a percentage of lost earnings, a lifetime pension based on prior earnings for permanently disabled victims or dependent survivors of victims of fatal accidents, and modest lump sum payments for certain types of injuries to compensate for noneconomic losses.[72] This approach to accident cost compensation was inspired by reports of prestigious study commissions in both countries that reached the following conclusions.[73] First, tort law does not create incentives for safety. Second, tort law does not provide a consistent and reliable source of compensation to accident victims. Third, in the majority of cases, tort law does not minimize secondary accident costs, because it does not provide compensation. Fourth, the administrative costs of tort law are extraordinarily high.

The findings of the Australian and New Zealand Commissions almost certainly are equally applicable to the United States tort system, and indeed are corroborated by studies of less ambitious scope conducted here.[74] Before embracing the Australian and New Zealand approach, however, the implications of that approach for

---

71. *See* authorities cited in note 17 *supra.*

72. Marks, *supra* note 17, at 518-19.

73. Marks, *supra* note 17, at 516; *Report, supra* note 17, at 415; Vennell, *supra* note 17, at 23.

74. *E.g.*, U.S. DEP'T OF TRANSP., AUTOMOBILE INSURANCE AND COMPENSATION STUDY (1970); *See also A Social Insurance Scheme for Automobile Accident Compensation,* 57 VA. L. REV. 409 (1971).

determining the level of spending on safety should be recognized. The funds from which accident costs are compensated by the Australian and New Zealand Boards are obtained from generalized fixed-rate taxes on owners of motor vehicles and on employers.[75] Thus, under these compensation systems, all accident costs, except those borne by the victim, are completely externalized. As a result, the Australian/New Zealand approach removes all general incentives toward safety. At least United States tort law crudely and inefficiently provides some general incentives toward safety by encouraging large companies with loss-rated liability policies to reduce their accident costs,[76] and by encouraging consumers to switch from some goods and services with high accident costs to substitutes with lower accident costs.[77]

The Australian/New Zealand approach leaves society with direct regulation as its only means of encouraging safety. As I will detail in the next section of this Article, there are many significant problems with attempting to use direct regulation to encourage safety. It is highly unlikely that direct regulation alone can effectively produce a rational level and pattern of spending on safety. Moreover, direct regulation would create significant monetary and nonmonetary costs. It is far preferable to devise a more efficient and effective method of internalizing accident costs, if that is at all possible. The task of devising a viable alternative to tort law as a method of creating a market for safety must be reserved, however, until after direct regulation has been evaluated as an alternative means of encouraging safety.

IV. Direct Regulation as a Substitute for, or a Supplement to, the Market and Tort Law

A. *Advantages of Direct Regulation*

Direct regulation is usually justified on the theory that, in some areas at least, the combination of the market and tort law has proven ineffective as a mechanism for encouraging safety.

---

75. Marks, *supra* note 17, at 517.

76. "[T]he tort-litigation system and increased product liability insurance premiums have caused a number of manufacturers and insurers to devote more time and resources to product liability prevention. . . . [T]he data show that a much higher percentage of large companies have implemented formal product liability loss prevention programs than small firms." Final Report, *supra* note 22, at VI-47 to -48. *See also id.* at IV-12, -18 to -20.

77. The insurance premiums for some product lines are determined based upon the risks associated with those products. In such cases, it is fair to infer that some variations in accident costs are reflected in the sales price of products. *Id.* at VI-15 to -18.

Thus, it is the failure of other parts of the legal system to internalize accident costs that forces reliance upon direct safety regulation. Once the inadequacies of the operation of the market and tort law are recognized in a particular context, direct regulation appears to be the only available option for reducing accident costs. As demonstrated in the prior parts of this Article, the market and tort law are increasingly less effective (and more costly). Hence, the growth of direct regulation and its rapid spread to new areas is both understandable and seemingly justified.

The theory underlying direct regulation is relatively simple; if an activity is producing too many accident costs, prohibit the activity or require that it be carried on in a different manner. There is no reason in theory why direct regulation cannot produce an optimal level and pattern of spending on safety.[78] As with the market and tort law, however, direct regulation in practice falls well short of its theoretically attainable goals.

B. Limits of Direct Regulation

1. Setting Appropriate Standards

A major problem inherent in direct regulation is the difficulty of determining which safety standards or rules will produce the optimum level of spending on safety. The current debate focuses on the extent to which explicit quantification and comparison of the costs and benefits of various standards should be relied upon in lieu of purely subjective balancing of safety against costs. If cost-benefit analysis (CBA) can be applied to the process of establishing safety standards with acceptable results, direct regulation provides a promising alternative means of encouraging safety. Thus, to evaluate the efficacy of safety regulation, it is first necessary to explore the major impediments to the use of CBA as a means of determining optimal safety standards.

Determining causal relationships is, of course, indispensable to calculating the benefits of a proposed safety standard. Yet, this de-

78. Here I do not use optimal in the Pareto optimality sense. Since direct regulation necessarily reflects some measure of average taste and risk preference or aversion, it cannot produce Pareto optimality. Thus, I use optimal in the more limited sense of creating a situation in which the marginal cost of expenditures on safety and the marginal cost of accidents is approximately equal for each activity, with the measure of costs based upon some approximation of average individual values and preferences for risk. As Professor Calabresi has demonstrated, Pareto optimality is not a useful criterion for assessing any method of achieving safety because neither the market nor direct regulation can achieve Pareto optimality. G. CALABRESI & P. BOBBITT, *supra* note 1, at 83-87.

termination is often difficult, and the result is invariably imprecise. Carcinogenicity determinations provide a particularly apt illustration of the problem. With respect to most suspected carcinogens, it is impossible even to be certain that the agent causes cancer in humans, though animal test results provide reasonably reliable indications.[79] Determining with a high degree of confidence the number of cases of cancer that the particular agent will cause at particular exposure levels is beyond the state of the art.[80] The dose-response relationship for carcinogens has been hypothesized to possess several different, and inconsistent, characteristics,[81] and it is impossible at present to determine the accuracy of the relationships hypothesized.[82] Indeed, the dose-response curve probably differs significantly among various carcinogens.[83] Moreover, little is known about the synergistic effects of carcinogens that could cause the dose-response curve to differ from one population to another depending upon degree of exposure to other carcinogens or to non-carcinogens that may accelerate the spread of cancer.[84] In determining carcinogenicity, as in many other areas of accident causation, the state of the art and data availability limit regulators to a crude approximation of causal relationships.

It must be recognized, however, that regulatory agencies are probably institutionally better suited to determine causation than are courts. The regulatory agency can deal with statistical and probabilistic causation with all the data gathering and calculational advantages of a centralized decisionmaker. By contrast, courts have great difficulty dealing with probabilistic and joint causation, have limited access to relevant data, and have virtually no ability to make sophisticated calculations.[85] Moreover, curing

---

79. Interagency Regulatory Liaison Group, SCIENTIFIC BASES FOR IDENTIFYING POTENTIAL CARCINOGENS AND ESTIMATING THEIR RISKS 13, 70-71 (1979) [hereinafter cited as INTERAGENCY CARCINOGEN STUDY]. Hutt, *Quantitative Risk Assessment for Carcinogens*, Legal Times of Washington, Apr. 30, 1979, at 10.

80. INTERAGENCY CARCINOGEN STUDY, *supra* note 79, at 72-73; Hutt, *supra* note 79.

81. INTERAGENCY CARCINOGEN STUDY, *supra* note 79, at 74-85; Hutt *supra* note 79.

82. INTERAGENCY CARCINOGEN STUDY, *supra* note 79, at 84-85. *See also* McGarity, *Substantive and Procedural Discretion in Administrative Resolution of Science Policy Questions: Regulating Carcinogens in EPA and OSHA*, 67 GEO. L.J. 729 (1979).

83. INTERAGENCY CARCINOGEN STUDY, *supra* note 79, at 84.

84. *Id.* at 13, 95-100.

85. The relative inability of courts to deal with problems of probabilistic causation can be illustrated by comparing the efforts of centralized regulatory agencies and decentralized courts to grapple with the problem of carcinogenicity. The agencies have experienced difficulty with the problem and are unable to determine causal relationships with precision greater than rough statistical approximations. By contrast, however, the courts have proven totally incapable of dealing with carcinogenicity on even the most fundamental levels. *See,*

these deficiencies would be prohibitively expensive because of the large number of courts and the institutional characteristics of courts as decisionmakers.

A second advantage enjoyed by a centralized regulatory decisionmaker is the ability to determine the "cause" of accidents by identification of the entity that can avoid accident costs most effectively and at least cost. As Professor Calabresi has demonstrated, the party causally responsible for a particular type of accident in this sense often is not even before the court in a tort action.[86] Again, trying to cure this defect in the tort system would vastly increase its already staggering administrative costs by transforming every tort case into a polycentric dispute of the type the judicial system simply has not been able to accommodate.[87] Thus, while causation remains a major problem in the centralized decisionmaking of regulatory agencies, those agencies are better able to deal with the problem than courts.

Determining causal relationships, however, is only one of many problems with the use of CBA. After causal relationships have been approximated, it is necessary to calculate the magnitude of costs and benefits using a common denominator, usually dollars. CBA has been subject to considerable criticism on the basis that it is much easier to calculate costs of regulation than to calculate benefits.[88] In fact, calculating either side of the equation is very difficult, and significant costs of regulation often are omitted.[89] To illustrate the calculation problem, however, I will concentrate on the benefit side of the equation. Many of the difficulties in translating accident costs into dollars can be demonstrated by considering one recurrent situation—placing a monetary value on the lives saved as a result of imposing a costly new regulatory requirement.

Two different approaches have been suggested as methods to value lives saved for purposes of CBA calculations—valuation

---

e.g., Daly v. Bergstedt, 267 Minn. 244, 126 N.W.2d 242 (1964); Kramer Serv., Inc. v. Wilkins, 184 Miss. 483, 186 So. 625 (1939). *See also* Small, *Gaffing at a Thing Called Cause*, 31 TEX. L. REV. 630 (1953).

86. G. CALABRESI, *supra* note 4, at 256.

87. *See* Henderson, *Judicial Review of Manufacturers' Conscious Design Choices: The Limits of Adjudication*, 73 COLUM. L. REV. 1531 (1973). *See also* Pierce, *The Choice Between Adjudication and Rulemaking for Formulating and Implementing Energy Policy*, 31 HASTINGS L.J. 1 (1979).

88. *E.g.*, Costle, *Stop Demagoguery on Cost-Benefit Analysis*, Legal Times of Washington, Apr. 9, 1979, at 32.

89. For instance, CBA rarely includes substantial indirect costs of regulation such as increased concentration of market power and increased uncertainty that reduces business investment. On the latter, *see generally* Pierce, *supra* note 87, at 21-27.

methods used in tort law and valuation based upon the conduct of individuals. The first approach can be disposed of summarily due to the serious deficiencies discussed previously in tort law's methods of valuing life. Certainly, society would not be comfortable with safety standards premised, for instance, upon a value of $28,355 for the life of a child. Thus, evidence based upon individual risk-taking conduct takes on added appeal simply because of the absence of any other rational basis for valuation.

Many economists have attempted to employ statistical methods to determine the value that individuals implicitly place upon their lives. In theory, this is relatively simple; it requires merely analysis of data on the amount of money individuals are willing to spend or forgo in order to avoid a risk of loss of life. The results of the studies, however, do not produce consistent valuations. For instance, my review of the literature yielded studies purporting to show implicit valuations of life of $166,000,[90] $176,000,[91] $199,000,[92] $240,000,[93] $260,000,[94] $1,500,000,[95] and $2,600,000.[96] This relatively wide range of results is not at all surprising. Indeed, as study in this area begins to focus upon a wider variety of risks, the range of implicit values is likely to increase. Consider, for instance, the implicit value of life evidenced by the conduct of the large number of people who refused to venture outdoors, or even took refuge in caves, in an effort to avoid exposure to the one in six hundred billion risk of being struck by a piece of Skylab.[97] A study of this behavior would conclude that those people placed an implicit value on their lives approaching infinity, even though many of the same people undoubtedly place a very low implicit value on their lives routinely by driving without seat belts or at excessive speeds.

A fundamental problem with using valuations of life implicit in risk-taking behavior is that the evidence is inconsistent, ambigu-

---

90. Blomquist, *Value of Life: Implications of Automobile Seat Belt Use*, University of Chicago Ph.D. Thesis, *reprinted as Urban Economics Report No. 150*, 15 (1976).

91. Thaler & Rosen, *The Value of Saving a Life: Evidence from the Labor Market*, NAT'L BUREAU OF ECON. RESEARCH CONF. ON INCOME AND WEALTH, HOUSEHOLD PRODUCTION AND CONSUMPTION (1975).

92. *Id.* at 46.

93. Lenard, *Lawn Mower Safety*, BENEFIT COST ANALYSES OF SOCIAL REGULATION 61, 67 (J. Miller & B. Yandle eds. 1979).

94. Ghosh, Lees & Seal, *Optimal Motorway Speed and Some Valuations of Time and Life*, 43 MANCHESTER SCHOOL OF ECON. & SOC. STUD. 134, 141 (1975).

95. R. SMITH, *supra* note 37, at 93.

96. *Id.* at 91.

97. *Skylab's Fiery Fall*, TIME, July 16, 1979, at 20.

ous, and often paradoxical. The psychology literature explains the strange results of the economic studies and suggests serious limits on the functional utility of such studies. As one psychologist puts it, "intelligent people systematically violate the principles of rational decisionmaking when judging probabilities, making predictions, or otherwise attempting to cope with probabilistic tasks."[98] The factors that cause individuals to place widely varying implicit values on their lives include the magnitude of the risk (most people will expose themselves to a one percent risk of death for substantially less than one-fifth of the money they demand for exposure to a five percent risk of death); whether the risk is voluntary or involuntary; whether the risk is common or unusual (common, low probability risks of death are often treated as zero risks by individuals to obtain a greater sense of personal security); the manner in which the risk is communicated; whether the risk is associated with a particularly vivid or emotive event; and the magnitude of the benefits against which the risk is weighed (but the relationship here is nonlinear).[99] This leaves the regulator with the difficult task of deciding which implicit value of life based upon whose conduct in which risk exposure context should be used in making CBA calculation.[100]

Simply describing the analytical difficulties inherent in valuing human life suggests another significant problem with the use of CBA in determining safety standards. There may be a psychic injury to society resulting from the very process of placing an explicit value on human life. Placing implicit values on human life is an absolute necessity in all societies, but society rarely admits to weighing dollars against lives. Even in assessing damages for wrongful death, courts insist that they are merely providing compensation and disavow any actual valuation of the life lost.[101] Of course, society here is engaging in self-deception, but as Professor Calabresi puts it, "the obvious destruction of myths, when these are myths of the sort properly termed ideals, is a costly business for any society."[102]

---

98. Slovic, *supra* note 12, at 99-100.

99. *Id.* at 100-05. *See also* G. CALABRESI & P. BOBBITT, *supra* note 1, at 116-17.

100. Notwithstanding the conceptual limitations on the use of conduct as a method of valuing life and the difficulty of selecting an appropriate conduct-based measure, conduct still appears to provide the best measure of the average individual's valuation of life for purposes of determining the level of risk to which individuals should be involuntarily subjected. *See* G. CALABRESI, *supra* note 4, at 205-09.

101. *E.g.*, Florida Dairies Co. v. Rogers, 119 Fla. 451, 161 So. 85 (1935).

102. G. CALABRESI & P. BOBBITT, *supra* note 1, at 115.

There are other costs that flow from the use of CBA as well. Use of CBA to set safety standards necessarily produces high transaction costs in the regulatory process. A thorough CBA for a proposed safety standard requires hundreds of highly skilled man-hours. Even assuming that efficient decisionmaking procedures are used,[103] the regulatory system permits (and often, as a practical matter, demands) that several CBAs be conducted for any proposed standard which is subject to dispute.[104] The regulatory transaction costs become staggering when the quite rational requirement of incremental CBAs and CBAs for proposed alternatives are added.[105]

The final major difficulty in establishing safety standards based on CBA is the tremendous potential for manipulation of the numerical ratio. As Amory Lovins has persuasively demonstrated, result-oriented technicians can use a variety of techniques in calculating the CBA to mask what otherwise would be recognized as blatant biases and analytical errors.[106] The often symbiotic relationship between regulators and a narrow constituency causes this potential abuse of CBA to take on considerable importance.

Throughout the foregoing discussion, I have assumed that a quantitative decisionmaking aid should be employed to determine appropriate safety standards for use in direct regulation. There is, of course, the alternative, supported by many, of relying entirely upon a combination of subjective decisionmaking and absolute pursuit of safety. Congress often eschews use of CBA in favor of subjective absolutism in determining safety standards.[107] Four sig-

---

103. *See generally* Pierce, *supra* note 87.

104. Even the least formal regulatory procedure requires that affected members of the public be given an opportunity to comment upon and to criticize a proposed regulatory standard and its basis. *See* Portland Cement Ass'n v. Ruckelshaus, 486 F.2d 375 (D.C. Cir. 1973), *cert. denied*, 423 U.S. 1025 (1975). Hence, to the extent an agency relies upon CBA to support a proposed standard, parties disagreeing with the standard have little choice but to compute and submit their own CBAs. Moreover, increasingly one agency of government or an interagency task force finds it necessary to calculate its own CBA to rebut that of another agency. *See, e.g.*, REPORT OF THE REGULATORY ANALYSIS REVIEW GROUP ON THE DEPARTMENT OF ENERGY'S PROPOSED REGULATIONS TO IMPLEMENT THE POWERPLANT AND INDUSTRIAL FUEL USE ACT OF 1978 (1979) [hereinafter cited as REVIEW GROUP REPORT]. *See generally* BENEFIT-COST ANALYSES OF SOCIAL REGULATION (J. Miller & B. Yandle eds. 1979) [hereinafter cited as BENEFIT-COST ANALYSES].

105. *See generally* BENEFIT COST ANALYSES, *supra* note 104. *See also* Lovins, *Cost-Risk-Benefit Assessments in Energy Policy*, 45 GEO. WASH. L. REV. 911, 935 (1977); Simon, *The Business Roundtable Study: What We Did*, REGULATION, July-Aug. 1979, at 20.

106. Lovins, *supra* note 105.

107. Two examples of statutory provisions which apparently require standards based upon absolute pursuit of safety are the Delaney Clause of the Food, Drug and Cosmetic Act

nificant problems with this approach are apparent. First, if the agency actually follows the absolute safety mandate, the result is likely to be overspending on some aspects of safety and underspending on others, with a significant net reduction in accident costs avoided per dollar spent on safety. Second, subjective decisionmaking is as likely to mask biases, errors, and result-oriented regulation as is decisionmaking aided by CBA. Third, regulators confronted with a mandate to obtain absolute safety still use some form of *sub rosa* quantified balancing. Fourth, when agencies use a combination of official subjective absolutism and *sub rosa* quantified balancing, irrational patterns of spending on safety inevitably evolve.

Actual adherence to an absolute standard of safety in a particular area necessarily produces badly skewed safety spending patterns. It is impossible for society to pursue an absolutist philosophy in all contexts or even to do so with respect to a broad category of risks, such as involuntary exposure risks.[108] Given this basic premise, it necessarily follows that total accident costs always can be reduced by shifting safety spending from an activity in which absolutism has prevailed to virtually any other activity. This proposition is very simple to prove using the marginal analysis that is central to microeconomics.

Subjective decisionmaking has been used effectively for years as a means of disguising biases and analytical flaws in order to reach a predetermined result dictated by factors never alluded to in the decision itself. Just as the good numbers mechanic can engage in mathematical subterfuge, the good verbal mechanic can use semantic tricks to hide political favoritism, vindictiveness, and incomplete analysis. Indeed, because there is more precision and uniform terminology in the language of mathematics, it is easier to demonstrate the flaws in a decision reached with the aid of a quantification tool such as CBA than to pierce the artful prose of a

---

and the provision of the Occupational Safety and Health Act that governs standards for toxic chemicals. The Delaney Clause purports to prohibit as a food additive or as a drug for food-producing animals any substance that can induce cancer in man or animals. 21 U.S.C. §§ 348(c)(3)(A), 360(b). *See* Kleinfeld, *The Delaney Proviso—Its History and Prospects*, 28 FOOD DRUG COSM. L.J. 556 (1973). OSHA is required to set the standard "which most adequately assures, to the extent feasible, on the basis of the best available evidence, that no employee will suffer material impairment of health or functional capacity even if such employee has regular exposure to the hazard dealt with by such standard for the period of his working life." 29 U.S.C. § 655(b)(5) (1976). *See* McGarity, *supra* note 82, at 785-88.

108. *See* G. CALABRESI, *supra* note 4, at 198-99; G. CALABRESI & P. BOBBITT, *supra* note 1, at 136-39.

poorly reasoned but cleverly written subjective decision. Thus, the manipulation of decisionmaking tools by result-oriented regulators and technicians must be attacked through more basic changes in institutional decisionmaking.[109]

It is highly unlikely that any agency with an absolutist mandate actually follows that mandate consistently and eschews all efforts to balance the costs and benefits of safety standards. Rather, agencies make at least rough calculations covertly and disguise the quantitative basis for their decision through the use of ambiguous subjective terminology.[110] As a result, the actual basis for the decision is never publicly revealed, the decisionmaking pattern is grossly distorted by *sub rosa* calculations in which implicit values are irrationally determined, and the potential for politically motivated, result-oriented decisions is even greater than in a system relying explicitly on quantification aids.

OSHA's approach to determining safety standards for toxic chemicals provides a good example of how the process can work. OSHA disavows all reliance upon CBA in establishing safety standards. Based upon a reasonably well-supported interpretation of its organic act, OSHA takes the position that safety standards for workers are required to provide as much safety as is "feasible," and that the concept of feasibility negates any inference that costs should be balanced against benefits.[111] Of course, OSHA is still required to apply the term "feasible" in determining standards. With some assistance from the courts, OSHA has defined "feasible" as any standard that will not place a substantial number of affected employers out of business.[112] In other words, what began as an absolutist basis for standards was transformed into a basis dependent

---

109. *See* text accompanying notes 138-42 *infra*.

110. The two most recent past General Counsels of the Food and Drug Administration have acknowledged candidly FDA's *sub rosa* use of some form of balancing of costs and benefits in administering the theoretically absolute standard of the Delaney Clause. Hutt, *supra* note 79, at 10; Merrill, *Risk-Benefit Decisionmaking by the Food and Drug Administration*, 45 GEO. WASH. L. REV. 994, 999 (1977). This reaction to putatively absolute standards is common. For instance, when boards charged with allocating access to renal dialysis facilities were instructed to provide dialysis to anyone with "need" for dialysis, they responded by redefining need to reflect some weighing of costs and benefits. G. CALABRESI & P. BOBBITT, *supra* note 1, at 139.

111. *See* Occupational Safety and Health Administration, *Identification, Classification and Regulation of Toxic Substances Posing a Potential Occupational Carcinogenic Risk*, 41 Fed. Reg. 54,147 (1977).

112. Industrial Union Department v. Hodgson, 499 F.2d 467, 478 (D.C. Cir. 1974). *But see* Marsball v. American Petroleum Inst., 48 U.S.L.W. 5022 (1980) (holding that OSHA may not establish a more stringent standard without first finding that the existing standard exposes workers to significant risks).

upon determinations of the financial viability of each affected industry and the major firms within that industry. As a result, OSHA's interpretation still requires use of mathematical aids in decisionmaking. Only the nature of the calculations and the values inherent in the results differ from a traditional CBA calculation.

OSHA must analyze such factors as the elasticity of demand for an industry's product, the liquidity situation and capital structure of an industry, and an industry's access to external sources of capital. This is a process at least as difficult, expensive, and error-ridden as calculating a CBA. Moreover, the implicit valuation of accident costs yielded by this financial viability criterion can be truly bizarre. Value of lives saved, for example, is not used as an input to the calculation; such value is instead an implicit output of the calculation, with the magnitude of the value depending upon all the factors that determine the financial viability of an industry or the major firms within an industry. For an industry whose product has little value to society, the value placed on human life by the financial viability standard may be only a few dollars. For an industry whose product has great value to society, the value attached to human life could be scores of millions of dollars.[113] The allocational implications of the financial viability standard are even more bizarre. Consumers are given the price signal to increase their purchases of products with high accident costs and little value, and to decrease their purchases of products with low accident costs and great value.

It is hard to conjure up a system of accident cost control more irrational and less reflective of social values than the present tort system. Congress, however, has proven itself equal to the task through the values and allocative effects implied in OSHA's organic act. The single virtue of this approach to safety regulation is its apparent ability to preserve the myth—some would say ideal—of life's infinite value. One must ask, however, whether preservation of even such an important myth is worth the tremendous costs—both in dollars and in lives—of selecting a totally irrational method of determining the level and pattern of spending on safety. Surely there must be a better and more rational way to preserve this important ideal.[114]

---

113. Review of one recent OSHA standard by the Council on Wage and Price Stability indicated that the standard reflected an implicit value of life of nine million dollars. Levine, *Exposure to Inorganic Arsenic in the Workplace*, BENEFIT-COST ANALYSES, *supra* note 104, at 27.

114. It is not necessary to accept my views on the desirability of using CBA to estab-

2. Other Costs and Limits of Direct Regulation

There are problems associated with direct safety regulation in addition to those encountered in determining safety standards. In a dynamic economy, significant technological and economic changes occur rapidly.[115] Yet recalculating CBAs for every conceivable alternative standard in response to changes in economic or technologic factors is prohibitively expensive. As a result, safety standards rapidly become obsolete.[116]

Enforcement too is a major problem of direct regulation. Some studies have shown that safety standards in the occupational safety area have no effect whatsoever on the actual level of accident costs.[117] There undoubtedly are circumstances in which some safety standards have some beneficial effect,[118] but the empirical data on the relationship between safety standards and accident costs are not encouraging.

There is also considerable evidence that direct safety regulation increases the concentration of market power in an industry.[119] Some of this effect probably is attributable to economies of scale in providing safety and, to that extent, it must be accepted as a consequence of any method of inducing greater safety. Much of the concentration effect of safety regulation, however, is attributable to economies of scale in conducting tests, filing reports, and otherwise complying with the administrative burdens attendant to direct regulation.

---

lish regulatory standards in order to accept my conclusion that direct regulation has inherent constraints that make it undesirable as the sole legal tool for encouraging safety. All that is logically required to accept the latter contention is acceptance of the proposition that subjective decisionmaking and formal absolutism are not sufficient to determine appropriate regulatory standards. As the discussion in the text strongly implies, I believe CBA can be a helpful tool to regulators if its limits are well-understood. Most CBA calculations are so uncertain that the best that can be expected from them are general indications as to whether costs and benefits are "in the same ballpark" and identification of areas in which there is an acute need for additional data. *See* Kasper, *Cost-Benefit Analysis in Environmental Decisionmaking*, 45 GEO. WASH. L. REV. 1013, 1021-24 (1977).

115. *Id.* at 1016-17.

116. FINAL REPORT, *supra* note 22, at VII-37 to -42.

117. *E.g.*, J. CHELIUS, *supra* note 16, at 46-48.

118. Even the author of one of the studies that "proved" the total ineffectiveness of standard-based regulation supports the use of such regulation in some contexts. *Id.* at 61.

119. BENEFIT-COST ANALYSES, *supra* note 104, at 23-24, 72, 83. Tort law also contributes to increased concentration of market power because insurance premiums tend to be higher for small firms than for large firms. FINAL REPORT, *supra* note 22, at V-19 to -23. Tort law's concentration effect, however, is probably not as great as the concentration effect of direct safety regulation because tort law does not entail the detailed testing and reporting obligations often imposed by direct regulation.

Perhaps the most important disadvantage of direct safety regulation is its effect upon individual freedom. Substitution of direct safety regulation for market-determined levels of safety has significant implications for freedom and the ability of individuals to choose the mixture of comfort, pleasure, and risk they prefer. Safety decisions made in the context of direct regulation necessarily are based upon some measure of average or median tastes and preferences. The individual with a strong aversion to risk or a strong taste for risk must simply accept that level of risk determined collectively to be acceptable to society. The Pareto optimality and accommodation of individual tastes theoretically attainable through the market (were it not for externalities and transaction costs) is impossible to achieve through direct regulation. Some degree of constraint upon individual tastes and freedom is absolutely essential in any society, but complete abandonment of the market and internalization of accident costs in all areas of safety would force reliance upon direct regulation so pervasive as to undermine totally the individual freedom so highly prized in our society. The new approach to safety in Australia and New Zealand inevitably will have this effect. Tort law in the United States, with all its inefficiencies, ultimately will produce the same result unless a more effective method of internalizing accident costs can be devised.

V. A Proposed New Approach to Safety

In prior sections, I have demonstrated that the market for safety is ineffective largely because tort law is ineffective as a means of internalizing the costs of accidents to those who can control those costs, and direct regulation is ineffective largely because it is difficult to determine and enforce safety standards. Both mechanisms for controlling accident costs also have undesirable side effects. For activities that produce significant beneficial externalities tort law can produce a serious misallocation of resources.[120] Tort law also has very high transaction costs and produces implicit values of human life that differ markedly from social values. Direct regulation subordinates individual freedom to collective tastes. Furthermore, where regulatory techniques require an explicit valu-

120. Direct regulation also can produce misallocation of resources resulting from increased safety-related costs imposed upon activities with high beneficial externalities. It is unlikely, however, that the distortions created by direct regulation are as great, since the centralized regulatory decisionmaking process is more capable of accommodating and reflecting beneficial externalities than are courts. It is common for regulatory CBAs to include quantification of externalities. *See, e.g.*, Review Group Report, *supra* note 104.

ation of human life, there is a danger of psychic injury to society; on the other hand, when the regulators rely on implicit values of human life, the results are even less reflective of social values than those produced by tort law. I have also demonstrated that the deficiencies in the present methods of encouraging safety are so deeply embedded that they are impervious to incremental changes in the systems. Thus, tinkering with the existing mechanisms is futile. One has to ask, then, whether an alternative mechanism can be devised that will encourage safety more effectively at a lower administrative cost and that will also tolerably reflect social values. I believe the question can be answered affirmatively. Although the mechanism I propose cannot produce an optimal market for safety in the Pareto optimality sense, I firmly believe that society can improve its methods of dealing with the difficult safety problem by establishing a new institutional framework for government control of safety that responds to the most significant deficiencies in the present institutions with solutions that have proven effective in other contexts.[121]

A. Outline of the Proposal

The proposal has as its core the creation of a large new federal agency. This characteristic may detract from the political appeal of the proposal in some quarters, but the ultimate effect of creating one large agency of the type proposed would be to eliminate many existing agencies and decrease the need for direct safety regulation.

For the purposes of this Article, the proposed agency will be referred to as the Safety Enhancement and Compensation Agency (SECA). SECA would both compensate victims of accidents and regulate safety in all areas of the economy. In performing its compensation role, it would share many characteristics of the Accident Compensation Boards now functioning in New Zealand and pro-

121. Professor Franklin proposed a somewhat similar mechanism for replacing the tort system, although he based his proposal upon a different perception of the flaws in the tort system. Franklin, *Replacing the Negligence Lottery: Compensation and Selective Reimbursement*, 53 VA. L. REV. 774 (1967). My proposal differs from Professor Franklin's in several respects, the most important of which are (1) I would integrate safety regulation in the same agency that has responsibility for accident cost compensation and assessment; and (2) while Professor Franklin emphasizes general tax revenues as the primary source of funds for the compensation scheme with supplementary use of selective reimbursement, I would maximize the use of specific cost assessments on activities and firms with supplementary use of general tax revenues. Implicitly, my proposal reflects a greater sense of need to internalize accident costs to encourage safety.

posed in Australia.[122] It would differ materially from those agencies, however, in its source of compensation funds. Some of its funding undoubtedly would have to be obtained from general revenues, but one of the agency's primary tasks would be to internalize costs of accidents to the maximum extent possible to entities in the best position to control those costs. Its power to impose direct safety standards would be supplementary to its power to internalize accident costs.

B. Advantages of the Proposal

1. Providing Compensation

In determining the appropriate compensation for an accident, SECA would attempt to pursue only the goals of compensation and minimization of secondary accident costs to victims. The compensation decision would be unrelated to the safety enhancement goal of tort law except to the extent that encouraging safety suggests the need for accident victims to bear some of the costs of accidents.[123] This simplification of goals alone could drastically increase the agency's effectiveness in accomplishing its mission. Fault would be eliminated as a factor in determining eligibility for compensation except in the extremely rare class of cases in which the agency concludes that it actually can deter unsafe individual conduct by refusing compensation for injuries resulting from certain conduct.[124] The amount of compensation would be determined through generic formulas similar to those used for workers' compensation awards and for awards by the New Zealand and Austra-

122. *See* text accompanying notes 71-77 and note 72 *supra*.

123. There are two reasons why victims should bear some of the costs of accidents. First, it is extremely difficult to calculate subjective costs such as pain and suffering. Moreover, the subjectivity of these costs renders them particularly appropriate as a means of encouraging accident avoidance through individual conduct of potential victims. *See* G. CALABRESI, *supra* note 4, at 222-24. Second, a modest portion of objectively determinable costs, such as lost wages, should not be compensated to reduce the potential for malingering and fraudulent claims. Comparative studies have shown a higher accident rate in jurisdictions with high workers' compensation benefits than in jurisdictions with lower benefits. J. CHELIUS, *supra* note 16, at 45-46. The author of the study drew the inference that higher benefits produce more careless workers. I find such an inference highly implausible, but draw the alternative inference that higher benefits produce more malingering and fraudulent accident claims. In either event, the data suggests the need for victims to retain a portion of the purely monetary costs of accidents.

124. I am not convinced that such a class of accidents exists. It is possible, however, that accidents encompassed within the most narrow definition of assumption of risk fall within such a category. *See* Carr v. Pacific Telephone Co., 26 Cal. App. 3d 537, 103 Cal. Rptr. 120 (1972).

lian Accident Compensation Boards.

The net effect would be to make compensation more prompt and more certain, with the lottery characteristics of tort compensation eliminated. This, in turn, would produce better secondary accident cost avoidance. At the same time, the horrendous transaction costs of the tort system would be greatly reduced through elimination of the need to make tens of thousands of individual decisions on such nebulous issues as fault, level of future earnings, monetary value of pain and suffering, and value of lost consortium, companionship, etc. A few facts would remain as possible sources of dispute,[125] but it would be a rare case in which expensive trial type procedures would be required to resolve fact questions that would remain important to compensation decisions.[126]

2. Cost Internalization

Conversely, compensation and secondary cost minimization would be irrelevant to the agency's cost internalization goal. In working toward cost internalization, the agency would be given a statutory mandate to assess accident costs to the parties best able to control the costs of particular types of accidents.[127] SECA also would be authorized to spread accident costs over time and among entities to the extent required to reduce secondary accident costs among those entities in a position to control primary accident costs. In this manner it would serve both a cost assessment and a compulsory insurance function.

The agency would be required to accumulate data on accident costs by type of activity and, when possible, by the firms whose products or services were involved in accidents. Data collection would be greatly facilitated by the agency's compensation activities. Raw data on the nature and severity of accidents collected in conjunction with compensation decisions would be the starting point for the accident cost assessment procedure, but the valuation

---

125. Extent of disability and cause of disability still would require resolution by the new agency. The latter, however, could be determined statistically for entire groups of accidents based upon data provided in victims' requests for compensation. Since the availability and magnitude of compensation would not depend upon resolution of causal issues, the data related to causation reported in compensation claims could be relied upon in subsequent statistical determinations of cause without concern for the veracity and objectivity of victims.

126. Due process does not require adjudicatory procedures when the issues in dispute relate to degree of disability. Matthews v. Eldridge, 424 U.S. 319 (1976).

127. I cannot improve upon the criteria for imposing accident costs identified by Professor Calabresi. *See* G. CALABRESI, *supra* note 4, at 140-65.

of costs for compensation purposes would not carry over as the valuation for cost assessment purposes. To avoid the anomalies that could result from internalizing compensation-related valuations—for example, children's lives worth less than adults, laborers' lives worth less than executives—a generic set of accident consequence valuations would be used to determine the aggregate accident costs associated with any industry or activity.[128] Those aggregate costs then would be divided among firms in the industry in proportion to the involvement of the products and services of each firm in accidents, except to the extent that secondary loss minimization or inability to determine individual firm involvement dictate an assessment of costs among firms or over time.

Determining causation would remain an important and difficult job of the agency, but there are many institutional reasons to believe that SECA could perform this job more efficiently and effectively than the several thousand courts to which this responsibility is now entrusted. First, it is much easier to deal with probabilistic and joint causation in the aggregate than to cope with these problems in individual cases. Second, the focus of the causation inquiry would be very different in the agency's decisionmaking. Instead of analyzing minutiae concerning the extent to which factors like common carelessness contributed to a particular accident, the agency would concentrate on identifying causally responsible entities in the broader sense—*i.e.*, those entities in the best position to reduce accident costs. Third, the agency would have far better access to data and calculational skills relevant to determining causation than would any court. Fourth, the total transaction costs of internalizing accident costs would be greatly reduced by eliminating some types of factual disputes and centralizing the others in a single decisionmaking body that could, for example, with one decision concerning the assessment of costs associated with lawnmowers, accomplish the same task that now requires hundreds of judicial decisions.

Examples of the manner in which the agency would treat two very different types of accidents—lung cancer fatalities and motorcycle accident fatalities—illustrate the general operation of the proposed agency. The dependent survivors of lung cancer victims would be entitled to receive compensation from the agency. The

128. For this purpose, an average market value of life based upon risk-taking conduct probably provides the best measure of loss of life as an accident cost notwithstanding its limitations. *See* text accompanying notes 98-104 and note 100 *supra*.

formula for calculating the amount of compensation would be predetermined in a manner similar to workers' compensation systems and the Australian/New Zealand Accident Compensation Boards. Since compensation would be available for all dependent survivors, a very high percentage of accidents would be the subject of compensation claims.[129]

The information provided in the compensation claims would be designed to serve two different purposes. First, the claims would include the information necessary to determine the amount of compensation—*e.g.*, victim's salary and identity of dependents. Second, they would contain information useful to the agency in identifying the causes of lung cancer—*e.g.*, victim's occupation, employer, place of business, location of residence, work history, locational history, and smoking habits. Based upon statistical analysis of the data provided in compensation claims, SECA could draw inferences concerning the causes of lung cancer using Professor Calabresi's functional definition of cause.

Accident cost assessments would then be made against industries and activities identified as causally responsible for lung cancer. For instance, statistical analysis of data provided in compensation claims might support an inference that sixty percent of lung cancer is "caused" by smoking, twenty percent by occupational and environmental hazards associated with the steel industry, and twenty percent by other activities that cannot yet be identified. The agency would assess the costs of lung cancer fatalities to the cigarette and steel industries based upon the formula: total lives lost x percentage of deaths attributable to each industry x predetermined value of loss of life. Assuming 10,000 fatalities resulting from lung cancer and a standard value of life of $500,000, the cigarette industry would be assessed three billion dollars, and the steel industry one billion.[130] The assessment to each industry would be

129. Only dependent survivors of an accident victim would be entitled to full compensation. However, it probably would be necessary to provide for nominal compensation, say $500, to a nondependent survivor of a victim with no dependent survivors eligible for full compensation. The sole purpose of creating this additional beneficiary of tbe compensation scbeme is to ensure that there is always someone with an incentive to file a compensation claim in a fatal accident situation. Otherwise, the agency would not obtain data related to the cause of death of accident victims not survived by dependents. Such a gap in the agency's data pool would undermine its ability to internalize accident costs through the assessment process and to determine causal relationships.

130. This hypothetical illustration includes only loss of life as an accident cost. The same procedure would be used to provide compensation for, and assessments of, accident costs other than loss of life. Again, a set of predetermined standard costs of generic consequences of accidents would be used for cost assessment purposes to provide data rapidly

apportioned among firms in the industry in proportion to their causal involvement to the extent that statistical analysis of claims information could support reasonable inferences of causal relationships specific to firms. SECA would then have the option of spreading costs over time in order to reduce dislocation costs to firms or industries experiencing atypical or catastrophic accident costs during a particular period. In addition, it could assess costs in advance of their occurrence based upon actuarial projections of future costs attributable to present activities.

Through this method of cost assessment and compensation, the average accident cost assessment per life lost would exceed the average compensation paid to survivors. The excess revenue resulting from this process would be available to the compensation fund to provide at least a substantial portion of the money required to compensate victims and survivors of victims in circumstances where the agency's data is insufficient to permit reasonable causal inferences or where the existence of beneficial externalities requires the agency to assess only a portion of accident costs to a causally responsible activity. This excess assessment revenue would reduce the amount of money required from general revenues to maintain the compensation fund.

The agency would use a similar approach to fatal motorcycle accidents, but here the causation problem is somewhat different. Again, all surviving dependents would receive compensation based on a predetermined formula, and the compensation claims would be used both as a source of data to determine the amount of compensation and as a source of data from which broad causal inferences could be drawn. Based on prior studies of motorcycle accidents, we already know that over fifty percent of fatalities are attributable to the failure of automobile operators to yield the right-of-way to motorcyclists and that this failure to yield the right-of-way is, in turn, the result of the failure of automobile operators to see motorcycles.[131] Thus, using Professor Calabresi's approach, it is fair to infer that the functional cause of these accidents is not negligent failure to yield the right-of-way, as the tort system now concludes. Rather, it is the fact that motorcycles are not visible to automobile operators. Motorcycle manufacturers appear to be in the best position to avoid these accidents through modifications in lighting and paint selection. Therefore, the full

---

and with low transaction costs.

131. *See* note 62 *supra.*

cost of this class of accidents would be assessed to motorcycle manufacturers in proportion to the involvement of each manufacturer's products in accidents of this type.

There is ample reason to expect the agency's accident cost assessments to be more effective than tort damage actions in creating a market for safety. In addition to its superior ability to determine accident cause by reference to the criterion of least-cost accident-cost avoider, the agency also would be better positioned actuarially than liability insurers. It could, in effect, "loss rate" a great many more entities in carrying out its cost assessment and compulsory insurance functions,[132] thereby reducing the cost externalization now attributable to insufficient subcategorization of accident costs by providers of liability insurance. In addition, the certainty of SECA's cost internalization requirement would reduce the "Faust effect" that is particularly troublesome in small and medium-sized firms.

The agency would also be actuarially superior to present-day liability insurers. Rather than relying upon fault-based claims for compensation as its basic source of accident data, SECA could rely upon the no-fault compensation claims it processes. As a result, the agency should obtain about five times as much data on accident occurrence as the liability insurer now obtains during a comparable period.[133] Moreover, the costs of each accident would be calculated immediately by reference to the standard accident consequence valuation table, rather than having to await cost data resulting from often-protracted judicial proceedings. These characteristics assure the agency of greatly improved accident cost data; and adequate data, of course, are at the core of the actuarial process.

The agency would not only have superior access to accident cost data, but the data collected would be more useful as a basis for predicting future accident costs. One of the major factors confounding insurance actuaries is the large measure of uncertainty inherent in complex tort litigation. Because of the tort lottery, historical accident cost data associated with a firm as a result of past

---

132. Loss-rating refers to the process of determining the future accident costs applicable to a firm or product through statistical analysis of its historical accident costs. Because of the uncertainties and delays attendant to determination of accident costs through the tort system, only a small fraction of liability insurance is now available on a loss-rated basis. *See* notes 44-51 *supra* and accompanying text.

133. The accident cost data also could be expected to be more accurate than that obtained through the fault-based tort system. *See* note 37 *supra*.

tort litigation are not good predictors of the firm's future accident costs. With the elimination of these complexities, SECA would have data that are far more useful in the actuarial process.

The agency could further enhance allocative efficiency by considering explicitly the existence of beneficial externalities or paradoxical comparative advantage effects associated with an activity in determining whether to assess to that activity or the entities carrying out the activity the full costs of accidents that the activity is best positioned to control.[134] For instance, surgeons might be assessed only a fraction of the accident costs attributable to surgery. The process of discounting accident costs to reflect the existence of beneficial externalities or undesirable international trade consequences is difficult, but it can be accomplished much more accurately and effectively by a central decisionmaker with access to aggregate data and sophisticated calculation tools than by thousands of individual judges dealing only with discrete incidents.

The dramatic decrease in accident costs (and associated administrative costs) that accompanied the transition from tort law to workers' compensation demonstrates the potential benefits attainable through the proposed accident cost compensation agency.[135] Indeed, there are two reasons to expect even greater results from creation of a general accident cost compensation agency. First, careful structuring of the new agency could avoid some of the imperfections that have become apparent in workers' compensation schemes,[136] thus permitting more effective internalization of

---

134. *See* text accompanying notes 66-70 *supra*.

135. J. CHELIUS, *supra* note 16, at 44-45.

136. Even though workers' compensation has greatly increased safety in the workplace by internalizing a higher proportion of accident costs to those who are in a position to reduce those costs, it continues to fall well short of its theoretical capability because some costs still are not internalized. Two factors are primarily responsible for this incomplete internalization. First, workers' compensation costs are linked to the level of benefits, which do not reflect full accident costs. *See* Olson, *Selected Mechanisms for Insuring Product Liability*, in SELECTED PAPERS, *supra* note 33, at 30. This flaw would be eliminated in the organic act establishing the new agency through two devices. First, benefits would be subject to adjustment for inflation. Second, valuation for accident cost assessment purposes would not be linked to valuation for benefit purposes. Thus, even if the agency concluded that benefits associated with a class of accidents should be limited to, for instance, eighty percent of lost earnings in order to discourage malingering and fraudulent claims, the assessment of costs for that class of accidents still would reflect the full costs of the accidents measured by an average market value standard.

The second factor that contributes to the externalization of accident costs in the workers' compensation systems is the use of a narrow definition of cause in occupational disease cases. *See* J. CHELIUS, *supra* note 16, at 22-24. It has been reported that less than ten percent of the victims of occupational disease ever receive workers' compensation benefits. An-

accident costs. Second, the modern tort system that SECA would replace is far more complex and administratively costly than the tort system that was replaced by workers' compensation.[137] As a result, even greater proportionate reductions in administrative costs could be expected.

3. Direct Regulation by the Agency

Until now, the description of SECA has focused entirely upon its compensation and accident cost internalization functions. By performing the latter function more effectively than tort law, the agency could reduce significantly, but definitely not eliminate, the need for direct government safety regulation. Realistically, no matter how effectively the agency internalized costs, there would still be a need for some direct regulation in some areas.

The agency would be empowered to engage in direct safety regulation with respect to any activity. In determining whether to supplement cost internalization with direct regulation, the agency would consider two issues: (1) Is the combination of the market and the agency's forced internalization of accident costs effectively encouraging accident cost avoidance? and (2) If the answer to the first question is no, can safety in this activity be enhanced more effectively through changes in the methods of forced cost internalization or through direct regulation? SECA would thus be given a mandate to use accident cost internalization as its primary means of encouraging safety, with direct regulation relegated to a supplementary role.

One of the major beneficial effects of the proposal would be a marked reduction in the problems associated with direct safety regulation. Since the agency would rely primarily on cost internalization techniques, the private and social costs attributable to promulgation and enforcement of rigid safety standards would be reduced. Moreover, regulatory decisionmaking requires explicit valuation of human life—a process that may result in psychic injury to society—whereas SECA's cost assessment approach will not have the same negative consequences.[138] Perhaps most important,

---

derson, *Workmen's Compensation Laws Hit*, The Washington Post, Sept. 3, 1979, at B30. This flaw could be corrected by adopting Professor Calabresi's much broader definition of cause. *See* G. CALABRESI, *supra* note 4, at 140-65.

137. *See generally* Henderson, *supra* note 87.

138. The agency's accident cost assessment function would, of course, require valuation of life. Some means of valuing life is essential to any societal program to encourage safety. Valuation of life for accident cost assessment purposes, however, is more acceptable

individual freedom to take risks in order to pursue valued goals would be preserved to the maximum extent consistent with the need to confront individuals with the full societal costs of their decisions.[139]

Even with respect to the direct regulation function of the agency, there are three reasons to expect performance superior to that of existing regulatory agencies. First, the accident cost data gathered by the agency on an ongoing basis through its compensation and cost assessment activities would be useful in determining whether direct regulation of an activity is needed and in determining appropriate regulatory standards. Incremental CBAs could be performed without incurring extraordinary transaction costs because the relevant data already would be in the agency's possession. Second, replacing the multitude of overlapping agencies with a single, broad safety agency would enhance decisionmaking efficiency. For instance, instead of having four teams of government specialists attempting to determine carcinogenic dose-response re-

---

than the explicit balancing of lives against dollars required in establishing safety standards. Indeed, the valuations of life for cost purposes would appear to have the same indirect effect on safety as valuations in wrongful death actions. Thus, the legal system could avoid psychic harm to society by continuing to distinguish between explicit balancing of lives and dollars and mere valuation of life for cost assessment purposes. This apparent refusal to link lives and money is the critical factor in minimizing psychic harm.

139. There are occasional circumstances when individual freedom might actually be furthered by choosing direct regulation over accident cost internalization. Where a specific recurrent form of conduct accounts for a very high proportion of the costs of a class of accidents, and that form of conduct can be effectively banned, freedom may actually be enhanced by prohibiting the conduct directly rather than internalizing its costs to the broad activity in which it takes place. This is true because even the new agency would have limited ability to subcategorize activities for cost assessment purposes. As a result, assessment of costs to broad activities could inhibit freedom by increasing one group's costs of engaging in the activity by forcing them to assume costs attributable entirely to the recurrent conduct of another group. *See* G. CALABRESI, *supra* note 4, at 105. The wearing of motorcycle helmets illustrates the point well. A very high percentage of motorcycle accident costs are attributable to head injuries that could be avoided if the rider were wearing a helmet. Ideally, accident costs attributable to the rider's failure to wear a helmet should be assessed in such a manner that only those who ride without helmets bear these costs. Individual freedom would be furthered by such an allocation in the sense that people could choose to pay a higher price to engage in an activity with higher accident costs. It would be extremely difficult and costly, however, to subcategorize motorcycle accident costs in this manner. As a result, internalization of motercycle accident costs would force all who engage in the activity—with or without helmets—to pay costs attributable only to those who choose to ride without helmets. Many individuals who would wear a helmet are prevented from riding motercycles because the costs created by the other group make motorcycle riding prohibitively expensive. It is at least arguable that individual freedom would be furthered in this situation by direct prohibition of motorcycle riding without a helmet. This illustrates one of the circumstances in which the agency should choose direct regulation over modifications to its accident cost assessment procedure.

lationships for regulatory purposes, a single team of government scientists and statisticians in the new agency would be given responsibility for this difficult task.[140] Third, an agency with broad jurisdiction over all areas of safety regulation would engender greater trust in the fairness and objectivity of the regulatory process. As Professor Noll has demonstrated, "capture" of an agency by a narrow constituency uniquely affected by its decisions is much less likely when an agency has broad jurisdiction over a variety of activities.[141] Thus, to a large extent, creation of an agency with broad jurisdiction over safety would moot the debate over whether quantification provides a means of assuring the rationality of regulatory decisions or merely provides result-oriented decisionmakers a new means of disguising their errors and biases. Moreover, creating a single safety agency with broad jurisdiction would decrease the need for the use of costly and cumbersome decisionmaking procedures by providing an institutional forum in which there is greater assurance of neutrality. As Judge Friendly has persuasively argued, a neutral decisionmaker serves so many due process values effectively that many other procedural safeguards can be omitted if the neutrality of the decisionmaker is assured.[142]

VI. CONCLUSION

The proposal made in this Article is not likely to garner immediate support from any quarter. It may be characterized accurately as the kind of attempt at major social and economic engineering that the legal system has proven unable to implement in many other contexts. Yet, I would not prescribe such a major revamping of the legal system's methods of controlling safety if I did not find the underlying ailment both chronic and potentially fatal. For a variety of reasons, the market alone is no longer capable of effectively encouraging safety in a large and growing number of areas. Tort law has proven an abysmal failure at accomplishing its putative goals. Furthermore, the market and tort law will become even more ineffective as social, economic, and scientific relationships grow more complex and the nation embarks on other experiments in social engineering, such as national health insurance. If the present situation is permitted to evolve naturally, the inevitable result

140. To some extent, existing safety agencies have already recognized the advantages of joint efforts. *See, e.g.*, INTERAGENCY CARCINOGEN STUDY, *supra* note 79.

141. *See* Noll, *The Economics and Politics of Regulation*, 57 VA. L. REV. 1016, 1032 (1971).

142. Friendly, *"Some Kind of Hearing,"* 123 U. PA. L. REV. 1267, 1279-80 (1975).

will be total externalization of accident costs. When combined with a justifiable desire to decrease accident costs, this complete externalization, in turn, will force total reliance upon direct safety regulation. The implications of relying entirely upon direct regulation as a means of encouraging safety are frightening. Direct regulation by itself cannot control accident costs. Moreover, increases in regulatory authority threaten the present structure of the U.S. economy and, most importantly, individual freedom. The solution I propose may not be the best, and undoubtedly it requires considerable refinement. Unless we consider seriously some such major change in our methods of controlling safety, however, I fear a future society that is faceless and grey and a future economy that is so sluggish as to be incapable of responding to dynamic international economic forces.